U.S. Army Public Health Center

Public Health Report

Summary of Injury Prevention Activities supporting the Army Soldier Medical Readiness Campaign, 2011-2014

PHR No. S.0011225

Prepared by:

Michelle Canham-Chervak, PhD, MPH
Tyson Grier, MS
Mellina Stephen, MPH
Essie Pfau, MPH
Keith Hauret, MSPH, MPT
Esther O. Dada, MPH
Catherine Rappole, MPH
Bruce H. Jones, MD, MPH

Approved for public release, distribution unlimited

General Medicine: 500A

October 2016

APHC

ACKNOWLEDGEMENTS

The Soldier Medical Readiness Campaign (SMRC) brought together injury prevention experts from across the Army Medical Command (MEDCOM) and benefited from the partnerships formed between MEDCOM organizations representing research, public health, and policy. The planning and execution of SMRC injury prevention activities could not have been accomplished without the expertise and input from the exceptional clinicians and scientists at the OTSG Rehabilitation and Reintegration Division (Nikki Butler, Janet Papazis, Elizabeth North, Timothy Pendergrass, Joseph Molloy) and the U.S. Army Research Institute for Environmental Medicine (Michael Boye, Bradley Nindl, David DeGroot). The APHC SMRC team also included health promotion experts from APHC Health Promotion and Wellness (Theresa Jackson Santo, Kari Bruley McRae, Laura Mitvalsky, Heidi Warrington, Todd Hoover, Carrie Shult) whose efforts established robust metrics and initiatives supporting SMRC objectives related to tobacco free living, healthy weight maintenance, and regular physical activity. Joseph Houser of APHC Strategy and Innovation provided valuable discussion and support of strategy and metric development. Injury prevention activities with the 4th Infantry Division could not have been accomplished without the assistance of many, including Mary Kreuger, Candi Roberts, Kay McKinnie, Will North, Bill Werling, Nicole Bluemle, Samantha Woods, Shawn Bailey, and Rachel Snell. Finally, APHC leadership engagement and support (Timothy Adams, John Resta, Chad Weddell), in particular during Campaign development, aided in establishing initiatives with lasting impact.

REPORT DOCUMENTATION PAGE	Form Approved OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	**2. REPORT TYPE**	**3. DATES COVERED** *(From – To)*
30-10-2016	Final	January 2011 – December 2014

4. TITLE AND SUBTITLE	**5a. CONTRACT NUMBER**
Summary of Injury Prevention Activities supporting the Army Soldier Medical Readiness Campaign, 2011-2014	**5b. GRANT NUMBER**
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S) Michelle Canham-Chervak, Tyson Grier, Mellina Stephen, Essie Pfau, Keith Hauret, Esther O. Dada, Catherine Rappole, Bruce H. Jones	**5d. PROJECT NUMBER**
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)	**8. PERFORMING ORGANIZATION REPORT NUMBER**
Army Public Health Center, Aberdeen Proving Ground, Maryland 21010-5403	PHR NO. S.0011225

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	**10. SPONSOR/MONITOR'S ACRONYM(S)**
Army Public Health Center, Aberdeen Proving Ground, Maryland 21010-5403	APHC
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT

13. SUPPLEMENTARY NOTES

14. ABSTRACT

Purpose: To summarize Army Public Health Center activities related to injury surveillance and prevention in support of the Soldier Medical Readiness Campaign (SMRC), 2011-2014. **Execution:** In January 2011, APHC was tasked to provide an Action Officer to assist with campaign plan development and oversee six strategic objectives aimed to coordinate, synchronize, and integrate Army health promotion and injury prevention and human performance optimization (IP/HPO) efforts and contribute to SMRC strategic communication. A General Officer Steering Committee (GOSC) began meeting in January 2011; the campaign plan was released in April 2011. SMRC initiatives were tracked during monthly Action Officer Working Group meetings and quarterly GOSCs. Reporting of metrics in the Army Strategic Management System (SMS) began in January 2013. **Campaign Injury Prevention Products:** APHC Injury Prevention lead three initiatives related to medical readiness surveillance, including conducting injury surveillance for Soldiers during initial entry training, an epidemiologic analysis to identify the leading medical diagnoses and characteristics of Army medical non-ready status, and production of information papers summarizing deaths among active duty Soldiers, injury-related medical encounter data, and disability discharges among Regular Army and Reserve/National Guard Soldiers. In support of SMRC objectives to inform evidence-based (IP/HPO) programs and policies throughout the deployment cycle, APHC Injury Prevention conducted evaluations of physical training programs in three Brigade Combat Teams; the largest series of field investigations of injuries and physical fitness in operational Army units to date. In support of SMRC communication objectives, APHC Injury Prevention partnered with APHC Health Communication Science, the U.S. Army Research Institute for Environmental Medicine, and the Office of the Surgeon General's Rehabilitation and Reintegration Division to develop more than 50 communication products. **Conclusion:** The SMRC was the first Army medical campaign created specifically to address medical barriers to deployment, established at a time when the Army faced the challenges of sustained overseas operations and conflict. Following a final SMRC AOWG and GOSC, APHC leadership reviewed ongoing APHC SMRC activities in September 2014 and approved the merging of these activities with active Army and Army Medicine campaigns, such as the Army Ready and Resilient Campaign and the Army Medicine 2020 Campaign Plan.

15. SUBJECT TERMS:
Injury prevention, medical readiness, medical, public health, campaign

16. SECURITY CLASSIFICATION OF: UNCLASSIFIED			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
					Dr. Michelle Chervak
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**	Unclassified	65	**19b. TELEPHONE NUMBER** *(include area code)*
Unclassified	Unclassified	Unclassified			410-436-4655

Table of Contents

Page

Page

Appendices

Figures

Tables

Summary of Injury Prevention Activities supporting the Army Soldier Medical Readiness Campaign, 2011-2014
PHR No. S.0011225

1 Summary

1.1 Purpose

To summarize U.S. Army Public Health Center (APHC) [formerly U.S. Army Public Health Command] activities related to injury surveillance and prevention in support of the Soldier Medical Readiness Campaign (SMRC), 2011-2014.

1.2 Campaign Injury Prevention Products

The APHC Injury Prevention led three initiatives related to medical readiness surveillance: (1) injury surveillance for Soldiers during initial entry training (IET) beginning in fiscal year (FY) 2010; (2) an epidemiologic analysis to identify the leading medical diagnoses and associated characteristics of Army medical non-ready status; and (3) production of three information papers presenting analyses of existing data on health and administrative outcomes relevant to medical readiness. Specifically, the analyses summarized deaths among Active Duty Soldiers (2000 to 2010), medical encounter data (2012), and types of and temporal changes in disability discharges among Regular Army and Reserve/National Guard Soldiers (2000 to 2010).

- In FY 2010, Basic Combat Training (BCT) injury incidence by post ranged from 23.3% (Fort Jackson) to 32.5% (Fort Benning) for males and from 50.6% (Fort Jackson) to 59.0% (Fort Sill) for females. One Station Unit Training (OSUT) injury incidence by type of OSUT and post ranged from 33.6% (military police (MPs) at Fort Leonard Wood) to 42.5% (Infantry at Fort Benning) for males and from 70.2% (MPs at Fort Leonard Wood) to 71.3% (Engineers at Fort Leonard Wood) for females. Males and females in OSUT training had higher overall injury incidences than males and females in BCT at the same post, as is expected due to the longer duration of training and, therefore, greater exposure to injury risk. At posts that trained both males and females, female Soldiers had higher injury rates than their male counterparts. Injury incidence also varied by training cycle, within battalions, between posts, and by type of OSUT training conducted.

- Among Active Duty Army Soldiers, there were between 289 and 1,086 deaths annually from 2000 to 2010 attributed to battle and non-battle causes (i.e., accidents, disease, suicide, homicide). Among deaths due to unintentional (accidental) injury in 2010 (n = 179), leading specific causes were motor vehicles (50%), drugs/alcohol (23%), and aviation (7%).

- Injuries were the leading cause of medical encounters in 2012, resulting in over 1.3 million encounters affecting over 300,000 Soldiers. One out of five injury hospitalizations among Active Duty Army Soldiers was due to motor vehicle accidents, and the leading causes of outpatient visits were overexertion (27%), struck by/against objects (16%), and falls (16%).

- Among Regular Army Soldiers, medical discharge rates declined 11% from 2000 to 2010, from 162 to 144 per 10,000 Soldiers. Musculoskeletal conditions were the most common diagnoses associated with discharge (62%) during this time period, followed by mental disorders (15%).

Injury Prevention Activities in the Soldier Medical Readiness Campaign (PHR No. S.0011225)

In support of Soldier Medical Readiness Campaign Plan (SMR-CP), objectives to inform evidence-based injury prevention/human performance optimization programs and policies throughout the Army Force Generation (ARFORGEN) cycle, APHC Injury Prevention conducted evaluations of physical training programs in three Brigade Combat Teams of the 4th Infantry Division: the Iron Horse Performance Optimization Program, the Mountain Athlete Warrior Program, and the Tactical Athlete Program. The 4th Infantry Division (ID) fitness study is the largest series of field investigations of injuries and physical fitness in operational Army units to date.

- Injury incidence did not change with implementation of the Iron Horse Performance Optimization Program (56 injuries/1,000 Soldiers/month pre-implementation and 57 injuries/1,000 Soldiers/month post-implementation), a Physical Readiness Training (PRT)-based program, or the Mountain Athlete Warrior Program (39 injuries/1,000 Soldiers/month both pre-and post-implementation), a program that incorporated elements of extreme conditioning programs.

- With the Tactical Athlete Program, a PRT-based program that utilized a Musculoskeletal Action Team (physical therapist, physical therapy technician, two athletic trainers, and two certified strength and conditioning experts) to prevent injuries, a decrease in injury incidence from 65 injuries/1,000 Soldiers/month to 55 injuries/1,000 Soldiers/month ($p=0.07$) was observed.

In support of SMRC communication objectives, APHC Injury Prevention partnered with APHC Health Communication Science [formerly Health Information Operations] and, in collaboration with the U.S. Army Research Institute for Environmental Medicine and the Office of the Surgeon General's (OTSG) Rehabilitation and Reintegration Division, developed more than 50 communication products.

- SMRC Strategic Communications (STRATCOM) Working Group was formed and included representatives from research (U.S. Army Research Institute of Environmental Medicine (USARIEM), policy (OTSG Rehabilitation and Reintegration), public health (APHC Health Promotion, Injury Prevention), APHC Public Affairs Office, and APHC Health Communication Science. Its mission was to link military injury research, policy, public health, public affairs, and health communication communities in order to bring unintentional injury prevention and physical performance science to those in the field.

- As part of the working group's efforts, a SMRC Web page was created in 2012 to outline activities related to SMRC Strategic Theme 3.0. (Improve Health and Fitness, and Reduce Injury Rates). The page was hosted on the APHC public Web site, and although it encompassed only one aspect of the total campaign, it represented the only Web presence for the campaign. The Web content described the campaign's major initiatives as related to health promotion, injury prevention, and performance optimization.

- The SMRC STRATCOM Working Group developed posters, brochures, and tip cards promoting evidence-based strategies to reduce injury and improve performance of physical training activities. Examples included a brochure and poster with tips on avoiding injuries during sports, recreation, and exercise activities. The Working Group also created educational materials to provide more information about specific topics of interest, such as minimalist running shoes and extreme conditioning programs. These materials were distributed to intended audiences through the SMRC Web page, APHC Health Information Products e-Catalog, Army Medicine.mil, Army Medicine and APHC social media, and other

relevant channels. The SMRC communication materials were incorporated into subsequent initiatives such as the Performance Triad.

- The SMRC Injury Prevention/Human Performance Optimization Education Series, planned and executed by the SMRC STRATCOM Working Group, provided military medical providers and others supporting medical readiness with emerging scientific knowledge on injury prevention and performance optimization topics. Continuing Medical Education (CME) and Continuing Nursing Education (CNE) credits were offered to participants starting in 2013 and 2014 (respectively).

1.3 Conclusion

The SMRC was the first Army medical campaign established specifically to address medical barriers to deployment, recognized at a time when the Army was facing the challenges of sustained overseas operations and conflict. During its 3 1/2 year span, the SMRC made significant strides toward synchronizing medical activities and enhancing medical readiness. The SMRC concluded with the final Action Officer Working Group (AOWG) meeting in May 2014 and the final General Officer Steering Committee (GOSC) in June 2014. In September 2014, with APHC leadership review/approval, ongoing APHC SMRC activities were merged with ongoing Army and Army Medicine campaigns, such as the Army Ready and Resilient Campaign (R2C) and the Army Medicine 2020 (AM2020) Campaign Plan.

The synchronization and coordination of injury prevention activities within Army Medicine, initiated under the SMRC, have continued. The mission of the SMRC STRATCOM Working Group is continued by the Army Medicine Campaign Research to Practice Working Group, which facilitates routine communication of injury prevention activities and emerging lessons learned between a variety of disciplines and contributors to Army injury prevention, from research to clinical to public health. Also, data gathered and analyses conducted as part of IET injury surveillance and BCT program evaluations continue to facilitate Army data-driven decision making related to injury and physical fitness policies. Peer-reviewed publications resulting from this work add to the scientific knowledge base on Army injuries and Soldier physical fitness and serve to preserve lessons learned for current and future Army policy makers, scientists, and medical and public health professionals.

2 References

See Appendix A for a listing of references used within this report.

3 Authority

In December 2010, Warning Order 1 to U.S. Army Medical Command Operational Order 11-13 (Soldier Medical Readiness Campaign Plan) tasked the U.S. Army Public Health Command (Provisional) to provide one general officer to serve on the SMR-CP General Officer Steering Committee and lead or co-lead the following three lines of effort (LOE): LOE 3.0 Wellness, Injury Prevention, & Human Performance Optimization Programs, LOE 4.0 Measurements of Effectiveness, and LOE 5.0 STRATCOM.

4 Background

In 2010, the Army Surgeon General recognized that repetitive deployments had significantly increased the strain on Army Troops and their health-service support requirements (Schoomaker 2011). In response, the U.S. Army Medical Command (USAMEDCOM) established the Soldier Medical Readiness Campaign (SMRC) to support the deployment of healthy, resilient, and fit Soldiers and increase Soldier medical readiness by optimizing medical readiness systems, enhancing Soldier care, and improving Soldier health and fitness (U.S. Army Medical Command 2011).

More specifically, the SMRC aimed to provide commanders with the tools to manage their Soldiers' medical requirements; synchronize health promotion, injury prevention and human performance optimization programs across the Army; standardize the medical not ready (MNR) Soldier identification process; and implement medical management programs for the MNR Soldier population. A comprehensive approach was seen as the best means of ensuring standards for medical readiness reporting; synchronizing medical readiness management; synchronizing health promotion, injury prevention and human performance optimization programs; educating commanders and stakeholders on medical readiness; and evaluating the effectiveness of medical readiness policy and process. A goal was to do this across the Army Force Generation (ARFORGEN) cycle of deployment preparation and deployment. (U.S. Army Medical Command 2011)

The SMRC mission was formally stated as follows: USAMEDCOM conducts a coordinated, synchronized, and integrated comprehensive Soldier Medical Readiness Campaign to support ARFORGEN in each of its phases in order to increase the medical readiness of the Army. Its desired end state was to support the deployment of healthy, resilient, and fit Soldiers; increase the medical readiness of the Army; and effectively manage the medically not ready population in order to return the maximum number of Soldiers to available/deployable status. (U.S. Army Medical Command 2011)

In December 2010, USAMEDCOM tasked the U.S. Army Public Health Command (USAPHC) [now the Army Public Health Center (APHC)] in Warning Order 1 to Operational Order 11-13 (Soldier Medical Readiness Campaign Plan) to provide one general officer to lead or co-lead the following three Lines of Effort (LOE): LOE 3.0 Wellness, Injury Prevention, and Human Performance Optimization Programs; LOE 4.0 Measurements of Effectiveness; LOE 5.0 STRATCOM. The general officer also served on the SMRC General Officer Steering Committee (GOSC). USAMEDCOM also tasked USAPHC to provide action officer(s) to the SMRC Action Officer Working Group.

The LOEs were ultimately incorporated into the SMRC Campaign Strategy as Strategic Themes (Figure 1). As part of Operational Order 11-13 (Soldier Medical Readiness Campaign Plan), USAMEDCOM tasked the USAPHC Commanding General to oversee five objectives within Strategic Theme 3.0 (Improve Health and Fitness and Reduce Injury Rates). APHC Injury Prevention was tasked to oversee a surveillance objective under Strategic Theme 1.0 (Optimize Medical Readiness Systems), as shown in Figure 1. The strategic objectives are further defined in Table 1.

Injury Prevention Activities in the Soldier Medical Readiness Campaign (PHR No. S.0011225)

This report further describes APHC activities specifically related to injury surveillance (IP 4.0), injury prevention (IP 10.0), and strategic communications (LG 4.0) in support of the SMRC, 2011–2014.

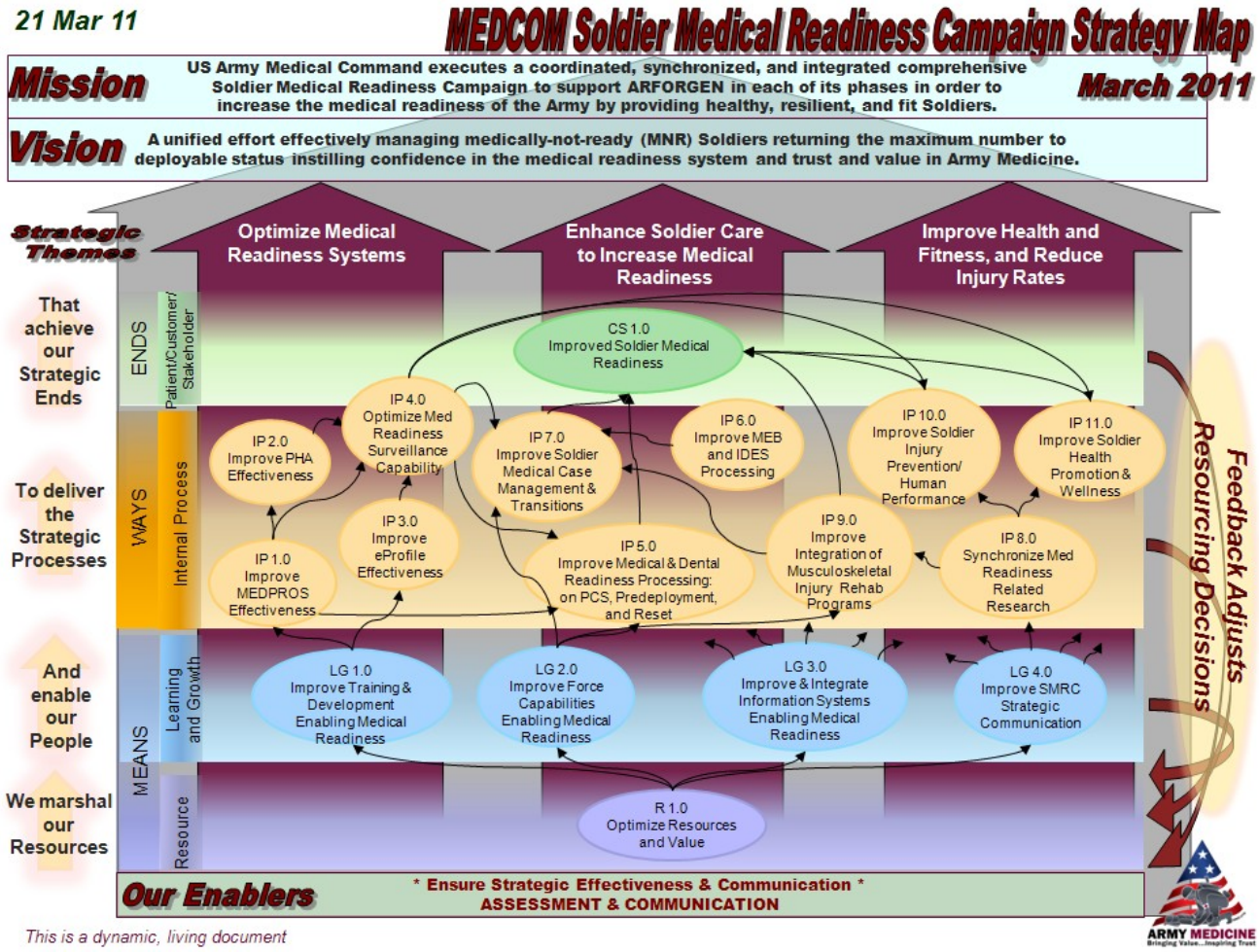


Figure 1. The USAMEDCOM Soldier Medical Readiness Campaign Strategy Map

Table 1. Soldier Medical Readiness Campaign Plan Strategic Objectives with APHC Oversight

Strategic Objective	Description
IP 4.0: Optimize Medical Readiness Surveillance Capability; Lead: APHC Injury Prevention	Develop capability for surveillance of injuries among the MNR Soldier population as a model for broader health surveillance. Identify, monitor, and report specific health outcomes that are barriers to SMR over time. Knowledge gained will enable establishing clinical and prevention efforts focused on the leading barriers to SMR.
IP 8.0: Synchronize Medical Readiness Research; Lead: USARIEM	Communicate Commanders' and public health research needs, collaborate with Army partners on injury prevention/human performance optimization projects, and enhance communication of evidence-based lessons learned to the Commanders, policymakers, and the health promotion community, ultimately contributing to the reduction in the number of MNR Soldiers.
IP 9.0: Improve Integration of Musculoskeletal Injury Rehab Programs; Lead: OTSG Rehabilitation & Reintegration	Synchronize, coordinate, and improve unit-based and military treatment facility (MTF)-based musculoskeletal injury rehabilitation programs to enable Soldier medical readiness.
IP 10.0: Improve Soldier Injury Prevention/Human Performance; Lead: OTSG Rehabilitation & Reintegration	Coordinate and synchronize evidence-based Injury Prevention/Human Performance Optimization policies and programs that support ARFORGEN in each of its phases in order to improve the medical readiness of the Army.
IP 11.0: Coordinate and Support Health Promotion & Wellness; Lead: APHC Health Promotion and Wellness	Increase the proportion of Soldiers who participate in regular physical activity, maintain a healthy weight, and live tobacco free, behaviors that directly affect injury risk and physical performance.
LG 4.0: Improve SMRC Strategic Communication; Lead: Army Directorate of Communications	Improve Strategic Communication with various communication tools and strategies to integrate information across all functions and engage key audiences/stakeholders to promote awareness and achieve the desired effect of the SMRC Plan.

5 Execution

In January 2011, APHC Injury Prevention provided an Action Officer to assist with campaign plan development and oversee the six strategic objectives. These objectives aimed to coordinate, synchronize, and integrate Army health promotion and injury prevention and human performance optimization (IP/HPO) efforts and contribute to SMRC strategic communication. By February 2011, 14 other APHC scientists and managers were identified to lead and/or assist with specific objectives (Appendix B). The APHC Action Officer coordinated activities and reporting with Strategic Objective Leads from the U.S. Army Institute for Environmental Medicine, the Rehabilitation and Reintegration Division at the OTSG, APHC Health Promotion and Wellness, and APHC Health Communication Science [formerly Health Information Operations].

5.1 Initial Planning and Battle Rhythm

Quarterly GOSCs began in January 2011, during which initial planning occurred and, after publication of the campaign plan, action officers briefed progress or impedances toward strategic objectives. The Deputy Surgeon General for Mobilization, Readiness, and Reserve Affairs chaired the GOSC and included five voting members from the following organizations: USAMEDCOM, U.S. Army G-1, U.S. Army Installation Management Command (IMCOM), U.S. Army Training and Doctrine Command (TRADOC), and U.S. Army Forces Command (FORSCOM).

The AOWG meetings occurred twice a month at the start of the campaign (January 2011) leading up to the following key events: a decision briefing to the Army Surgeon General (March 2011), merger with the existing Department of the Army Inspector General Medical Non-Deployable Campaign (March 2011), USAMEDCOM Rehearsal of Concept Drill (30 March 2011), and release of the final Soldier Medical Readiness Campaign Plan (April 2011). The AOWGs occurred once per month thereafter. The AOWG included personnel from Army G-1, Army G3/5/7, IMCOM, TRADOC, FORSCOM, U.S. Army Reserve Command, Director Army National Guard (DARNG), U.S. Army Special Operations Aviation Command, and 23 USAMEDCOM major subordinate units.

The published Soldier Medical Readiness Campaign Plan spanned 5 years, from 2011 to 2016. Development of objectives for Strategic Theme 3.0 (Improve Health and Fitness and Reduce Injury Rates) began in January 2011 with a meeting of IP/HPO and health promotion subject matter experts from OTSG Rehabilitation & Reintegration Division, USARIEM, APHC Injury Prevention, and APHC Health Promotion and Wellness. The January 2011 meeting agenda is presented in Appendix C.

In preparation for this meeting, available medical surveillance data were reviewed to help further define Strategic Theme 3.0 efforts (Figure 2). Medical surveillance data indicated that injuries resulted in over 900,000 medical encounters and affected over 253,000 Soldiers annually, surpassing all other medical conditions (U.S. Army Public Health Command (Provisional) 2009). In 2006, the Department of Defense Military Injury Prevention Priorities Working Group reviewed and assessed existing non-battle medical surveillance and field investigation data to identify the largest and most preventable unintentional injury problems. Leading the list for the Army was physical training, followed by parachuting and falls (Ruscio, Jones et al. 2010). Prevention of physical training-related injuries was selected as a focus for Strategic Theme 3.0 efforts based on this and other evidence in the literature such as proven prevention strategies (Bullock, Jones et al. 2010), and data available to monitor changes (Jones, Canham-Chervak et al. 2010). The Strategic Theme 3.0 (IP/HPO) Team also chose to focus health promotion efforts on selected health behaviors aligned with the National Prevention Strategy and related to injury prevention (e.g., maintenance of healthy weight, regular physical activity, tobacco free living). In addition, the team established the following specific tasks during this initial meeting:

- Pursue a data call to identify existing injury prevention programs
- Evaluate physical training programs in operational units at Fort Carson
- Explore eProfile and Digital Training Management System (DTMS) data, and
- Plan a stakeholder meeting to identify Commanders' injury questions

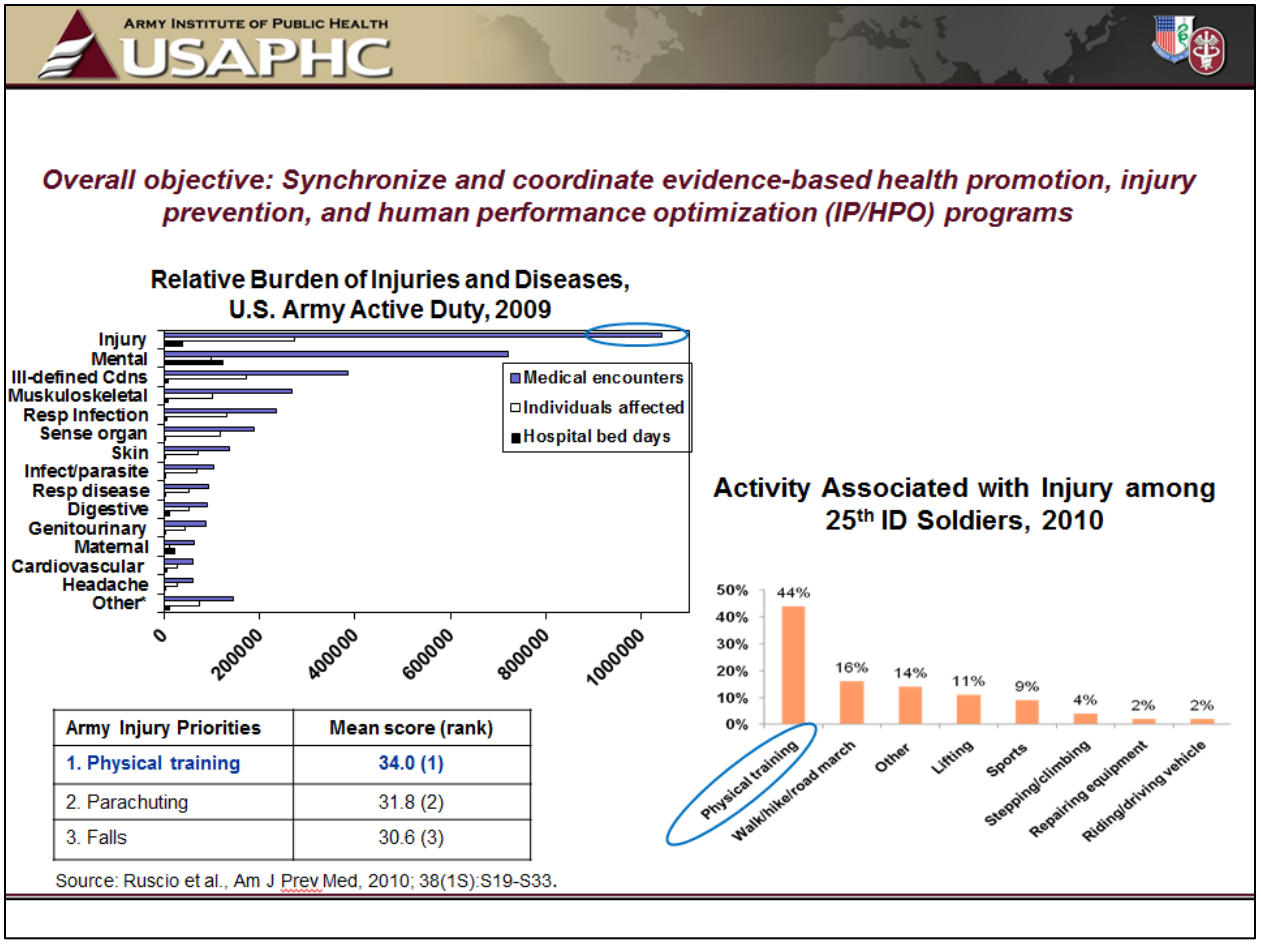


Figure 2. Defining Strategic Theme 3.0 Efforts: Review of Surveillance and Field Investigation Data

5.2 Metric Development

At AOWG meetings starting in January 2011, SMRC initiatives and progress were tracked using Task Action Plans (TAPs), which were modified monthly, discussed at AOWG meetings, and shared with the GOSC each quarter. Appendix D displays the TAP template. Metrics reporting in the Army Strategic Management System (SMS) began at the January 2013 GOSC. See Table 2 for the SMS metrics. The APHC Strategy and Innovation provided technical assistance to Strategic Objective Leads for quarterly SMS metric updating prior to each GOSC.

Table 2. Army Strategic Management System (SMS) Metrics for Strategic Objectives with APHC Oversight

Strategic Objectives	SMS Metric	Description
IP 4.0: Optimize Medical Readiness Surveillance Capability Lead: APHC Injury Prevention	IP 4.1, Completion of company-level injury surveillance efforts	Develops capability to monitor a specific health outcome (injury) affecting medical readiness at an actionable level. Represents the first unit-level injury surveillance program and supports evaluation of IET injury prevention programs (e.g., Soldier Athlete Initiative). Summarize unit-level BCT and OSUT injury rates for 192 BCT/OSUT units and 19 AIT units.
	IP 4.2, % of MNR cases linkable to medical records data on injury and other conditions	Enable identification of leading specific health outcomes that are barriers to Soldier medical readiness through linkage of MNR data with electronic medical records. Results will inform clinical and prevention planning.
	IP 4.3, % of surveillance reports completed for key medical outcomes (deaths, disabilities, and medical encounters)	Measures completion of surveillance reports from existing administrative and medical data sources to inform decision-making; information that can be used to guide decisions regarding next steps for addressing leading barriers to medical readiness.
IP 8.0: Synchronize Medical Readiness Research Lead: US Army Research Institute of Environmental Medicine (USARIEM)	IP 8.1, Number of publications on musculoskeletal injury and nutrition	Measures the number of publications produced by USARIEM scientists on musculoskeletal and nutrition topics
	IP 8.2, Number of presentations on musculoskeletal injury and nutrition	Measures the number of scientific presentations given by USARIEM scientists on musculoskeletal and nutrition topics
	IP 8.3, Number of communication products produced	Measures the number of SMRC-generated evidence-based musculoskeletal injury and nutrition lessons-learned communicated to Soldiers, Commanders, policymakers, and the health promotion community by USARIEM and APHC
IP 9.0: Improve Integration of Musculoskeletal Injury Rehab Programs Lead: OTSG	IP 9.1, Data obtained in units evaluated (BCT/Advanced Individual Training (AIT), 3/25ID, 2/4ID, 3/4ID, 4/4ID)	Measures the number of data elements obtained for IET and FORSCOM units with ongoing evaluations over the total number

Strategic Objectives	SMS Metric	Description
Rehabilitation & Reintegration		of data elements required.
	IP 9.2, % Medical Readiness Campaign (MRC) class 1 and 2 in selected FORSCOM unit	Measures the MRC Class I and II status as reported in Medical Protection System for a selected FORSCOM unit implementing a Musculoskeletal Action Team.
	IP 9.3, % Analysis completed assessing program effects in units evaluated (BCT/AIT, 3/25ID, 2/4ID, 3/4ID, 4/4ID)	Measures the percent completion of reports of program effects on injury and physical performance.
IP 10.0: Improve Soldier Injury Prevention/Human Performance Lead: OTSG Rehabilitation & Reintegration	IP 10.1, % 4ID Soldiers at 'low risk' of injury based on unit fitness assessments	Monitor results of fitness test assessments in a 4ID Basic Combat Team
IP 11.0: Coordinate and Support Health Promotion & Wellness Lead: APHC Health Promotion and Wellness	IP 11.1, % Army Wellness Centers worldwide meeting established standards	Describes number of Standardized Army Wellness Centers at target installations.
	IP 11.2, % installations with health promotion officer-facilitated Community Health Promotion Councils	Describes number of Health Promotion Officer-facilitated Community Health Promotion Councils at Army Installations.
	IP 11.3, % Soldiers maintaining healthy body weight	Reflects the percentage of Active Duty Soldiers who are at a healthy weight. Measures the patient's Body Mass Index and reflects the last patient appointment in MTFs.
	IP 11.4, % Soldiers reporting tobacco use (smoke and/or smokeless)	Measures the number of Soldiers reporting tobacco use (cigarette, smokeless, or both) over the total number of Soldiers at time of dental appointment.

6 Campaign Injury Prevention Products

6.1 APHC Injury Prevention Contributions to SMRC IP 4.0: Optimize Medical Readiness Surveillance Capabilities

APHC Injury Prevention led multiple initiatives related to medical readiness surveillance in support of the following SMRC metrics: IP 4.1, Completion of company-level injury surveillance efforts; IP 4.2, percentage of MNR cases linkable to medical records data on injury and other conditions; IP 4.3, percentage of surveillance reports completed for key medical outcomes (deaths, disabilities, and medical encounters) (Table 2).

Injury Prevention Activities in the Soldier Medical Readiness Campaign (PHR No. S.0011225)

In support of the first SMRC surveillance objective (IP 4.1), APHC Injury Prevention conducted injury surveillance for Soldiers during IET beginning in fiscal year (FY) 2010 (Appendix E). Reports of injury medical encounters for Soldiers assigned to 192 BCT/OSUT units and AIT units were used to monitor IET injury and fitness. Results were reported by unit and installation for BCT and OSUT. OSUT training combines basic combat training with advanced training and ranged from 13 weeks for Infantry to 19 weeks for Military Police (MPs). In FY2010, BCT injury incidence by post ranged from 23.3% (Fort Jackson) to 32.5% (Fort Benning) for males and from 50.6% (Fort Jackson) to 59.0% (Fort Sill) for females. The OSUT injury incidence by type of OSUT and post ranged from 33.6% (MPs at Fort Leonard Wood) to 42.5% (Infantry at Fort Benning) for males and from 70.2% (MPs at Fort Leonard Wood) to 71.3% (Engineers at Fort Leonard Wood) for females. Males and females in OSUT training had higher overall injury incidences than males and females in BCT at the same post, as is expected due to the longer duration of training and, therefore, greater exposure to injury risk. The highest injury rates for BCT males and females, respectively, were at Fort Benning (14.1/100 person-months) and Fort Sill (25.7/100 person-months). Males in MP OSUT had a lower injury rate than males who trained in Infantry or Engineer OSUT, as well as a lower injury rate than males in BCT at any post. Females who trained as MPs also had a lower rate than females in Engineer OSUT, as well as a lower rate than females in BCT at any post. At posts that trained both males and females, the female Soldiers had higher injury rates than their male counterparts enrolled in the same training. Elsewhere, data are reported by military occupational specialty (MOS) for AIT at Fort Jackson, Fort Leonard Wood, Fort Benning, and Fort Sill. These data were also used to compare injuries in units before and after establishment of musculoskeletal action teams (MATs) or athletic trainers (ATs) to support the units.

Toward the second surveillance objective (IP 4.2), in calendar year (CY) 2013, APHC Injury Prevention (Ms. Esther Dada, Dr. Chervak, Mr. Keith Hauret) initiated an epidemiologic analysis to identify the leading medical diagnoses and associated characteristics of Army medical non-ready status. The project plan received Public Health Review Board approval, and necessary data were acquired. The cross-sectional analysis involved the linkage of medical readiness, medical and evaluation board, and electronic medical record data. Results were intended to inform Army prevention efforts on the leading barriers to Soldier medical readiness.

In support of the third surveillance objective (IP 4.3), in CY2012, APHC Injury Prevention (Dr. Chervak) conducted an analysis of data from the Armed Forces Medical Examiner System and prepared an information paper summarizing deaths among Active Duty Soldiers from 2000 through 2010 (Appendix F). Among Active Duty Army Soldiers, there were between 289 and 1,086 deaths annually from 2000 to 2010. Accidents were the leading cause of death from 2000 to 2002 and surpassed war-related deaths in 2003. Suicide and motor vehicle accidents were among the top three causes of death across the 11-year time period examined. Among deaths due to unintentional (accidental) injury, leading specific causes in 2010 were motor vehicles (50%), drugs/alcohol (23%), and aviation (7%).

Also in support of the third objective, in CY2013, APHC Injury Prevention (Ms. Dada and Dr. Chervak) conducted an analysis of data from the Defense Medical Surveillance System and submitted an information paper summarizing current medical encounter data in support of the objective to provide summaries of key medical outcomes affecting readiness (Appendix G). Injuries were the leading cause of medical encounters in 2012, resulting in over 1.3 million encounters

affecting over 300,000 Soldiers. One out of five injury hospitalizations among Active Duty Army Soldiers were due to motor vehicle accidents; leading causes of outpatient visits were overexertion (27%), struck by/against objects (16%), and falls (16%).

Finally, in CY2011, APHC Injury Prevention (Dr. Chervak) conducted an analysis of data from the Physical Disability Computer Processing System and prepared an information paper summarizing types of and temporal changes in disability discharges among Regular Army and Reserve/National Guard Soldiers from 2000 through 2010 (Appendix H). Among Regular Army Soldiers, discharge rates declined 11% from 2000 to 2010, from 162 to 144 per 10,000 Soldiers. Musculoskeletal conditions were the most common diagnoses associated with discharge (62%), followed by mental disorders (15%). For Reserve/National Guard Soldiers, the total number of discharges more than tripled from 724 in 2000 to 2,673 in 2010. In 2010, mental disorders (n=1,036, 39%) surpassed musculoskeletal disorders (n= 979, 37%) as the leading cause of medical discharges for the first time.

6.2 APHC Injury Prevention contributions to SMRC IP 10.0: Improve Soldier Injury Prevention/Human Performance

In support of SMR-CP objectives to inform evidence-based injury prevention/human performance optimization programs and policies throughout the ARFORGEN cycle, APHC Injury Prevention conducted evaluations of physical training programs in three BCTs of the 4th ID, the largest series of field investigations of injuries and physical fitness in operational Army units to date. Data collection was completed in CY2013; over 18,000 surveys and 14,000 fitness assessments were collected. Injury incidence did not change with implementation of the Iron Horse Performance Optimization Program (55 injuries/1,000 Soldiers/month pre-implementation and 57 injuries/1,000 Soldiers/month post-implementation) (U.S. Army Public Health Command 2014), a Physical Readiness Training (PRT)-based program, or the Mountain Athlete Warrior Program (39 injuries/1,000 Soldiers/month both pre-and post-implementation), a program that incorporated elements of extreme conditioning programs (Grier, Canham-Chervak et al. 2014). With the Tactical Athlete Program (a PRT-based program that utilized a MAT (physical therapist, physical therapy technician, two athletic trainers, and two certified strength and conditioning experts) to prevent and more readily treat injuries), a decrease in injury incidence from 65 injuries/1,000 Soldiers/month to 55 injuries/1,000 Soldiers/month (p=0.07) was observed (Grier, Canham-Chervak et al. 2014). Improvements in aerobic endurance as measured by Army Physical Fitness Test (APFT) run times were seen with the Mountain Athlete Warrior Program. This program emphasized resistance training and lower running mileage; however, none of the programs resulted in improvements in muscle endurance (i.e., APFT sit-up or push-up performance) (U.S. Army Public Health Command 2016). Average post-implementation total APFT scores were similar across programs, indicating that no program enhanced fitness more than another. These results will inform future policy regarding Army physical fitness training, extreme conditioning programs, and MATs.

See Appendix I for a list of products developed as a result of work with the 4th ID.

6.3 APHC Injury Prevention Contributions to LG 4.0: Improve SMRC Strategic Communication

APHC Injury Prevention partnered with APHC Health Communication Science [formerly Health Information Operations] to accomplish SMRC Strategic Communication tasks. A health communication specialist with a background in exercise science was hired and, in collaboration with the U.S. Army Research Institute for Environmental Medicine and the Office of the Surgeon General's Rehabilitation and Reintegration Division, more than 50 communication products were developed in support of the SMRC. These products focused primarily on injury prevention and human performance optimization activities. A working group created under the SMRC, the SMRC STRATCOM Working Group, developed and disseminated news articles, educational materials, Web pages and initiated and managed an online seminar series. Communication activities were targeted to specific populations within the Army community, to include leaders, Soldiers, beneficiaries, and medical providers.

The SMRC STRATCOM Working Group began meeting in 2011. The APHC SMRC Action Officer chaired the working group and included representatives from research (USARIEM), policy (OTSG Rehabilitation & Reintegration), public health (APHC Health Promotion, Injury Prevention), APHC Public Affairs Office, and APHC Health Communication Science. Its mission was to link military injury research, policy, public health, public affairs, and health communication communities in order to bring unintentional injury prevention and physical performance science to those in the field.

6.3.1 Web Page(s)

APHC Health Communication Science created a Web page for the SMRC in 2012 to describe efforts related to the campaign's Strategic Theme 3.0 (Appendix J). The APHC public Web site hosted the SMRC page, and although it encompassed only one aspect of the total campaign, it represented the only Web presence for the campaign. The Web content described the campaign's major initiatives as related to health promotion, injury prevention, and performance optimization. The Web page provided links to online news articles, communication print materials, and resources. In 2014, APHC Health Communication Science created an additional Web page (Appendix K) to advertise the SMRC Injury Prevention/Human Performance Optimization (SMRC IP/HPO) Education Series. This Web page provided Information regarding upcoming sessions and links to presentation slides. In 2015, APHC's injury prevention activities transitioned to another campaign, and the SMRC Web pages were archived on the APHC public Web site (http://phc.amedd.army.mil/topics/campaigns/smrc/Pages/default.aspx).

6.3.2 Educational Materials

Members of the SMRC STRATCOM Working Group collaborated to develop educational materials delivering practical, actionable, and accurate health information to lay audiences. All communication materials were posted on the SMRC Web page (Appendix J), and several were also posted to the APHC Health Information Products e-Catalog where they could be downloaded and printed copies ordered. Posters, brochures, and tip cards developed in support of the SMRC promoted evidence-based strategies to reduce injury and improve performance of physical training

activities. For example, the "Don't Get Sidelined…Train Smart" brochure and poster were developed in 2011 to provide tips to Soldiers on avoiding injuries during sports, recreation, and exercise activities. The SMRC STRATCOM Working Group also created educational materials to communicate risks, dispel myths, and provide more information about specific topics of interest. A Minimalist Running Shoe (MRS) brochure and poster, developed in 2012, are examples of this type of effort. The content describes the structure of the MRS, steps for running in them safely, and the Army's guidance on approved shoe selection.

SMRC materials were utilized in subsequent communication initiatives. One notable example is the Performance Triad campaign, an Army Medicine initiative that promotes nutrition, physical activity, and healthy sleep behaviors among the Army community. Key messaging for Soldiers in the activity portion of the campaign featured injury prevention information and guidance for maintaining one's fitness. Campaign materials consisted of posters, tip cards (i.e., pocket-sized pamphlets), table tents, videos, and a guidebook with more detailed information on each facet of the Performance Triad. The SMRC-related topics found in these materials included information on extreme conditioning programs, weight training safety, and the Army Physical Readiness Training Program.

APHC Health Communication Science created all materials developed in support of the SMRC or in conjunction with other Army initiatives through extensive collaboration with subject matter experts, graphic designers, and health communication specialists from the APHC and across the Army Medical Command. These materials were distributed to intended audiences through the APHC Health Information Products e-Catalog, Army Medicine.mil, Army Medicine and APHC social media, and other relevant channels.

6.3.3 News Articles

The APHC Public Affairs Office coordinated injury prevention and performance optimization-related news articles. Subject matter experts and public affairs staff wrote articles to highlight health promotion activities throughout the APHC and the Army, as well as to inform audiences about various health topics. The SMRC-related articles included topics such as running shoe technology, lowering salt intake, and the dangers of tobacco use. Articles were disseminated monthly through channels such as the Army Times, Army.mil, and the APHC public Web site (see Appendix J).

6.3.4 Online Seminar

The SMRC IP/HPO Education Series was a primary information dissemination activity for the SMRC STRATCOM Working Group. The Series was designed to provide military medical providers and staff with up-to-date information on diverse medical readiness topics. The Series was hosted quarterly on Defense Connect Online with at least two presentations from experts in the fields of injury prevention, human performance optimization, or health promotion. A total of 10 seminars were held from March 2012 to December 2014 (see Appendix K). The APHC partnered with representatives from the Army Medical Specialist (SP) Corps, Army Nurse Corps, Health Promotion Operations, APHC Disease Epidemiology, and others to market the seminars to physical therapists, dietitians, physicians, health educators, and nurses throughout the Army. Presentations included scientists from the APHC, USARIEM, OTSG R2D, Walter Reed Army Institute of

Research, and Tripler Army Medical Center (TAMC). Presentation topics included "Army Restorative Physical Readiness Training," "Encouraging Healthy Food Choices with an Environmental Intervention in Military Dining Facilities," and "H.E.A.L.T.H." [Healthy Eating Activity Lifestyle Training Headquarters], Technology Tools for Warfighter Readiness & Resilience."

The series averaged 36 participants per session, with physical therapists being the most common audience. The CME and CNE credits were first offered to participants in 2013 and 2014 (respectively) to draw further interest in the Series and support medical providers' educational requirements. APHC Health Communication Science developed the education series Web page and newsletter (entitled the "Medical Readiness Rundown") as promotional tools, in addition to other advertising efforts (e.g., flyers, APHC Administrative Announcements page).

7 Conclusion

The SMRC was the first Army medical campaign created specifically to address medical barriers to deployment, established at a time when the Army was facing the challenges of sustained overseas operations and conflict. During its 3 1/2 year span, the SMRC made significant strides toward synchronizing medical activities and enhancing medical readiness. Metrics tracked by the SMRC indicated that by March 2014, the proportion of National Guard Soldiers medically ready to deploy (Medical Readiness Class 1 or 2) increased from 61% to 82%; among Army Reserves, medical readiness increased from 62% to 79%; and among the Active Component, medical readiness increased from 80% to 83%. While much of these increases were due to SMRC-initiated improvements in processes such as disability evaluation and dental examinations, synchronizing and coordinating injury prevention activities across stakeholders from the Army clinical, medical research, and public health communities led to contributions such as the 4ID injury prevention-program evaluations; it also led to the development of numerous injury prevention-communication products.

In January 2012, 1 year after initiation of the SMRC, LTG Schoomaker retired; since that time, other Army and Army Medicine campaigns were implemented, such as the R2C, AMED2020 Campaign Plan, and Army Medicine Performance Triad (Army Medicine Public Affairs 2013; Nindl 2013). The final SMRC AOWG meeting was held in May 2014, and the final GOSC was held in June 2014. In September 2014, with APHC leadership review/approval, ongoing APHC SMRC activities were merged with active Army and Army Medicine campaigns, such as the Army R2C and the AMED2020 Campaign Plan (Appendix L).

The synchronization and coordination of injury prevention activities within Army Medicine, initiated under the SMRC, have continued. Examples include the Army Medicine Campaign Research to Practice Education Series, originally the SMRC IP/HPO Education Series, which continues to bring emerging injury prevention and performance optimization science to clinicians and public health practitioners in the field. The SMRC STRATCOM Working Group mission is continued by the Army Medicine Campaign Research to Practice Working Group, which manages the Education Series and maintains communication of injury prevention activities between a variety of disciplines and contributors to Army injury prevention. Also, data gathered and analyses conducted as part of IET injury surveillance and BCT program evaluations continue to facilitate Army data-driven decision making related to injury and physical fitness policies. Peer-reviewed publications resulting from this

work add to the scientific knowledge base on Army injuries and Soldier physical fitness and serve to preserve lessons learned for current and future Army policy makers, scientists, and medical and public health professionals.

8 Point of Contact

The APHC Injury Prevention Division is the point of contact for this project, e-mail usarmy.apg.medcom-phc.mbx.injuryprevention@mail.mil, or phone number 410-436-4655, DSN 584-4655. Specific questions may be directed to authors listed at the front of this report.

Approved:

JONES.BRUCE.HOVEY.1149391270

Digitally signed by JONES.BRUCE.HOVEY.1149391270
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=JONES.BRUCE.HOVEY.1149391270
Date: 2017.03.29 09:55:03 -04'00'

BRUCE H. JONES, MD, MPH
Manager
Injury Prevention Division

Appendix A

References

Army Medicine Public Affairs. 2013. The Transformation of Army Medicine: MEDCOM Celebrates 19 Years of Organizational Resilience. Prepared by Dunbar VL. Accessed October 2016 at https://www.army.mil/article/112479/THE_TRANSFORMATION_OF_ARMY_MEDICI.

Bullock SH, BH Jones, J Gilchrist, SW Marshall. 2010. Prevention of physical training-related injuries: Recommendations for the military and other active populations based on expedited systematic reviews. Am J Prev Med **38**(1 Suppl): S156-181.

Grier T, M Canham-Chervak, T Bushman, M Anderson and B Jones. 2014. Evaluations of Physical Training Programs in an Infantry Division. 2014 International Congress on Soldiers' Physical Performance, Boston, MA.

Jones BH, M Canham-Chervak,S Canada, TA Mitchener, S Moore. 2010. Medical surveillance of injuries in the U.S. military: Descriptive epidemiology and recommendations for improvement. Am J Prev Med **38**(1 Suppl): S42-60.

Nindl BC, TJ Williams, PA Deuster, NL Butler, BH Jones. Oct-Dec 2013. Strategies for optimizing military physical readiness and preventing musculoskeletal injuries in the 21st century. US Army Med Dep J: pp. 5-23.

Ruscio BA, BH Jones, SH Bullock, BR Burnham, M Canham-Chervak, CP Rennix, TS Wells and JW Smith. 2010. A process to identify military injury prevention priorities based on injury type and limited duty days. Am J Prev Med **38**(1 Suppl): S19-33.

Schoomaker E. 2011. Transforming Army Medicine to Ensure Quality Care and Optimal Readiness. Army.

U.S. Army Medical Command. Soldier Medical Readiness Campaign Plan 2011 - 2016, 30 March 2011.

U.S. Army Public Health Command. 2014. Evaluation of the Iron Horse Performance Optimization Physical Training Program (IHPOP) in a Light Infantry Brigade, October 2010-April 2011 (Injury Report No. WS.0030637). Prepared by T. Grier, M. Canham-Chervak, M. Anderson, T. Bushman and B. Jones. USAPHC, Aberdeen Proving Ground, MD.

U.S. Army Public Health Command. 2016. Evaluation of the Mountain Athlete Warrior (MAW) Physical Training Program in a Light Infantry Brigade, March 2011-February 2013 (Injury Report No. WS.0007177). Prepared by M. Anderson, T. Grier, M. Canham-Chervak and B. Jones. USAPHC, Aberdeen Proving Ground, MD.

U.S. Army Public Health Command (Provisional). 2008. U.S. Army Annual Injury Epidemiology Report (Report No. 12-HF-0APLa-09). Prepared by E. Dada-Laseinde, M. Canham-Chervak and B. Jones. USAPHC, Aberdeen Proving Ground, MD.

Appendix B

SMR-CP Initial Strategic Objective Teams, February 2011

LOE 3.0/ IP 11.0 (Health Promotion & Wellness)	LOE 3.0/ IP 9.0 & 10.0 (Injury Rehab & Injury Prevention)	LOE 3.0/ IP 8.0 (Injury Research)	LOE 4.0/ IP 4.0 (Injury Surveillance)	LOE 5.0/ LG 4.0 (SMRC Strategic Communications)
Lead: APHC	**Lead: OTSG**	**Lead: USARIEM**	**Lead: OTSG**	**Lead: OTSG**
APHC Health Promotion and Wellness (9 staff members)	OTSG Rehabilitation and Reintegration Division (3 staff members)	U.S. Army Research Institute of Environmental Medicine (4 staff members)	OTSG Strategy Management (6 staff members)	OTSG Strategic Communications (3 staff members)
	APHC Injury Prevention Program (5 staff members)	OTSG Rehabilitation and Reintegration Division (2 staff members)	APHC Health Promotion and Wellness (1 staff member)	APHC G-7 Communications (2 staff members)
		APHC Injury Prevention Program (2 staff members)	APHC Injury Prevention Program (1 staff member)	

Appendix C

Agenda
Soldier Medical Readiness Campaign Plan, Strategic Theme 3.0
Team Meeting 20-21 January 2011
U.S. Army Public Health Command (Provisional), Building E1570, APG, MD

DAY ONE (20 January 2011)
FOCUS: Initiatives 3.2-3.4

0800-0815	Welcome & Introductions (USAPHC)
0815-0900	Presentation of Task Action Plans, Initiatives 3.2-3.4 (Initiative Leads – 15 mins/ea)
0900-0915	Background – Musculoskeletal Action Plan & data call results (OTSG Rehabilitation and Reintegration Division)
0915-1015	Brainstorming session – Gaps in Injury Prevention/Human Performance Optimization knowledge (All)
1015-1030	Break
1030-1130	Working lunch: Detailed discussion – Fort Carson projects (All)
1130	Break & depart to HQ for Action Officer Working Group VTC
1200-1430	Action Officer Working Group meeting
1430-1500	Break & return to Building E1570
1500-1530	Overview of Line of Effort 4.0 (USAPHC Injury Prevention Program & Health Promotion and Wellness)
1530-1600	Prioritizing prevention & research efforts (USAPHC Injury Prevention Program)
1600-1630	Wrap-up
1630	Adjourn

DAY TWO (21 January 2011)
FOCUS: Initiative 3.1

0800-0915	Presentation of Task Action Plan, Initiatives 3.1, and discussion (USAPHC Health Promotion & Wellness)
0915-1000	Planning for 26JAN briefing to APHC Commander (USAPHC)
1000-1100	Wrap-up & discussion of next steps
1100	Adjourn

Appendix D

SMRC Task Action Process (TAP) Reporting Template

INITIATIVE	TASK	OPR	OCR(S)	SUSPENSE	STATUS	LINKAGES
		Office of Primary Responsibility	Coordinating			
RECOMMENDATION:						
TASK:						
OUTCOME:						
TASK UPDATE						**PROPOSED STATUS**
SUB-TASK OPR	**SUSPENSE**	**ITEMS OF INTEREST**				
DELIVERABLE:						
STRATCOM:				**METRICS:**		
CONSTRAINTS/RESOURCING:						
FOLLOW-UP:						

Appendix E

Injury Surveillance for Initial Entry Training Soldier Athletes Initiative, 2010

INFORMATION PAPER

MCHB-IP-DI
13 January 2012

SUBJECT: Injury Surveillance (FY10) conducted by the US Army Public Health Command for the Initial Entry Training (IET) Soldier Athlete (SA) Initiative

1. Purpose: To summarize findings from the company-level injury surveillance program developed by the Army Public Health Command for the IET SA Initiative

2. Facts:

a. In support of the Soldier Medical Readiness Campaign Plan Initiatives 3.3 (Implement Medical Management, Rehabilitation, and Reintegration) and 4.3 (Improve Medical Readiness Surveillance), analyses were conducted to describe injuries occurring in Basic Combat Training (BCT) and One Station Unit Training (OSUT) units, including those participating in the Soldier-Athlete Initiative. Per paragraph 4c(1)(c) of MEDCOM OPORD 10-46 (Implementation of Initial Entry Training Soldier-Athlete Initiative), the US Army Public Health Command was tasked to implement an on-going, company-level injury surveillance program for BCT and OSUT units to enable tracking of injury trends over time at the unit-level.

b. Using electronic rosters provided by the Army Training and Doctrine Command linked with injury data from the Defense Medical Surveillance System, injury incidence (% of IET Soldiers with one or more injuries) was calculated for each BCT and OSUT cycle with a start date in fiscal year (FY) 2010 at Forts Jackson, Leonard Wood, Benning, and Sill. Injury incidence was calculated separately for males and females. Since all training is conducted at the company-level, injury incidence was reported by company and then summarized for each battalion, brigade, and post.

c. BCT cycles train for 10 weeks. Lengths of OSUT cycles vary by Military Occupational Specialty (for example, infantry at Benning train 13 weeks, engineers at Leonard Wood train 14 weeks, military police (MP) at Leonard Wood train 19 weeks).

d. Table 1 (Enclosure 1) presents the overall injury incidence for all BCT and OSUT cycles conducted at each post in FY10. Results are presented for males and females separately. Also presented is the range in injury incidence (lowest to highest injury incidence) for all training cycles at each post in FY10.

    1. BCT injury incidence by post ranged from 23.3% (Jackson) to 32.5% (Benning) for males and from 50.6% (Jackson) to 59.0% (Sill) for females. At each post, there was a wide range, lowest to highest, in injury incidence for training cycles conducted at that post. This was true for males and females in BCT.

    2. OSUT injury incidence by type of OSUT and post ranged from 33.6% (MPs at Leonard Wood) to 42.5% (Infantry at Benning) for males and from 70.2% (MPs at Leonard Wood) to

3. 71.3% (Engineers at Leonard Wood) for females. There was also a wide range in injury incidence, lowest to highest, for each OSUT and for males and females. Males and females in OSUT training had higher overall injury incidences than males and females in BCT at the same post. This higher injury incidence for OSUTs is due to the longer duration of training and, therefore, greater exposure to injury risk.

4. As an example of the range in injury incidence among cycles that trained at each post, Figure 1 (Enclosure 1) presents the male injury incidence for all FY10 BCT cycles at Fort Leonard Wood. The training cycles are grouped according to the BCT company that conducted the training and are further grouped within the three BCT battalions at Fort Leonard Wood. Though not presented, similar differences in injury incidence between training cycles were found for the BCT and OSUT companies and battalions at all four posts and for males and females.

e. To enable comparison of injury incidences between BCT and OSUT given the different durations of training (para 2c, above), injury rates (number of injured Soldiers per 100 person-months [p-mos] of training) were also calculated (Enclosure 1, Table 2).

1. The highest injury rates for BCT males and females, respectively, were at Forts Benning (14.1/100 p-mos) and Sill (25.7/100 p-mos).

2. Males in MP OSUT had a lower injury rate than males who trained in Infantry or Engineer OSUT, as well as a lower injury rate than males in BCT at any post. Females who trained as MPs also had a lower rate than females in Engineer OSUT, as well as a lower rate than females in BCT at any post.

3. At posts that trained both males and females, the female Soldiers had higher injury rates than their male counterparts for the same training. The rate ratios (females: males) ranged between 1.8 for MP OSUT to 2.4 for BCT at Fort Sill.

3. Conclusions:

a. Injury incidence in BCT and OSUT varies by training cycle, even when comparing training cycles for the same company. Variation is also seen when comparing companies within battalions and the different battalions at each of the posts. Furthermore, differences in injury incidence occur between posts and between types of training (MP, Engineering, and Infantry) being conducted.

b. This IET surveillance will enable injury prevention initiatives to be directed at the BCT and OSUT units that consistently have higher injury incidence and to learn from the units that are consistently able to train with lower injury incidence.

1 Encl — Injury Prevention Program/ (410)436-4655

1. Tables 1 and 2, Figure 1 — Approved by: Director, Army Institute of Public Health

Table E-1. Post-level Injury Incidence for Soldiers in BCT and OSUT during FY10

Post	BCT Injury Incidence (Percent of Soldiers Injured in FY 10 Training Cycles)				OSUT Injury Incidence (Percent of Soldiers Injured in FY 10 Training Cycles)				
	Males		Females			Males		Females	
	Incidence (%)	Incidence Range for All Cycles (min-max)	Incidence (%)	Incidence Range for All Cycles (min-max)	**OSUT Type**	Incidence (%)	Incidence Range for All Cycles (min-max)	Incidence (%)	Incidence Range for All Cycles (min-max)
Benning	32.5	(15.3 - 61.6)	-	-	**Infantry**	42.5	(17.3 - 72.9)	-	-
Leonard Wood	25.7	(9.1 - 46.8)	51.5	(31.9 - 80.0)	**Engineer**	41.7	(5.1 - 60.9)	71.3	Not calculated[a]
					MP	33.6	(15.3 - 56.8)	70.2	(47.1 - 91.7)[b]
Jackson	23.3	(9.0 - 40.7)	50.6	(29.5 -82.0)					
Sill	25.0	(6.1 - 43.5)	59.0	(35.9 - 84.2)					

a. Only 94 females trained with Engineer companies during all of FY10, therefore, only an overall incidence is provided.

b. Two cycles which trained fewer than 20 females and were not included in the range of the injury incidence by cycle.

Table E-2. Overall Injury Incidence and Injury Rates by Post - FY10[a]

Post	BCT Injuries					OSUT Injuries					
	Males		Females		Rate Ratio (Females: Males)		Males		Females		Rate Ratio (Females : Males)
	Incidence (%)	Rate (injuries/100 p-mos)	Incidence (%)	Rate (injuries/100 p-mos)		OSUT Type	Incidence (%)	Rate (injuries/100 p-mos)	Incidence (%)	Rate (injuries/100 p-mos)	
Benning	32.5	14.1	-	-	-	**Infantry**	42.5	14.0	-	-	-
Leonard Wood	25.7	11.2	51.5	22.5	2.0	**Engineer**	41.7	14.0	71.3	25.0	1.8
						MP	33.6	8.5	70.2	17.8	2.1
Jackson	23.3	10.1	50.6	22.0	2.2						
Sill	25.0	10.9	59.0	25.7	2.4						

a. Overall rates are presented as the number of injuries per 100 person months in training.

b. Rate Ratio = injury rate for females: injury rate for males.

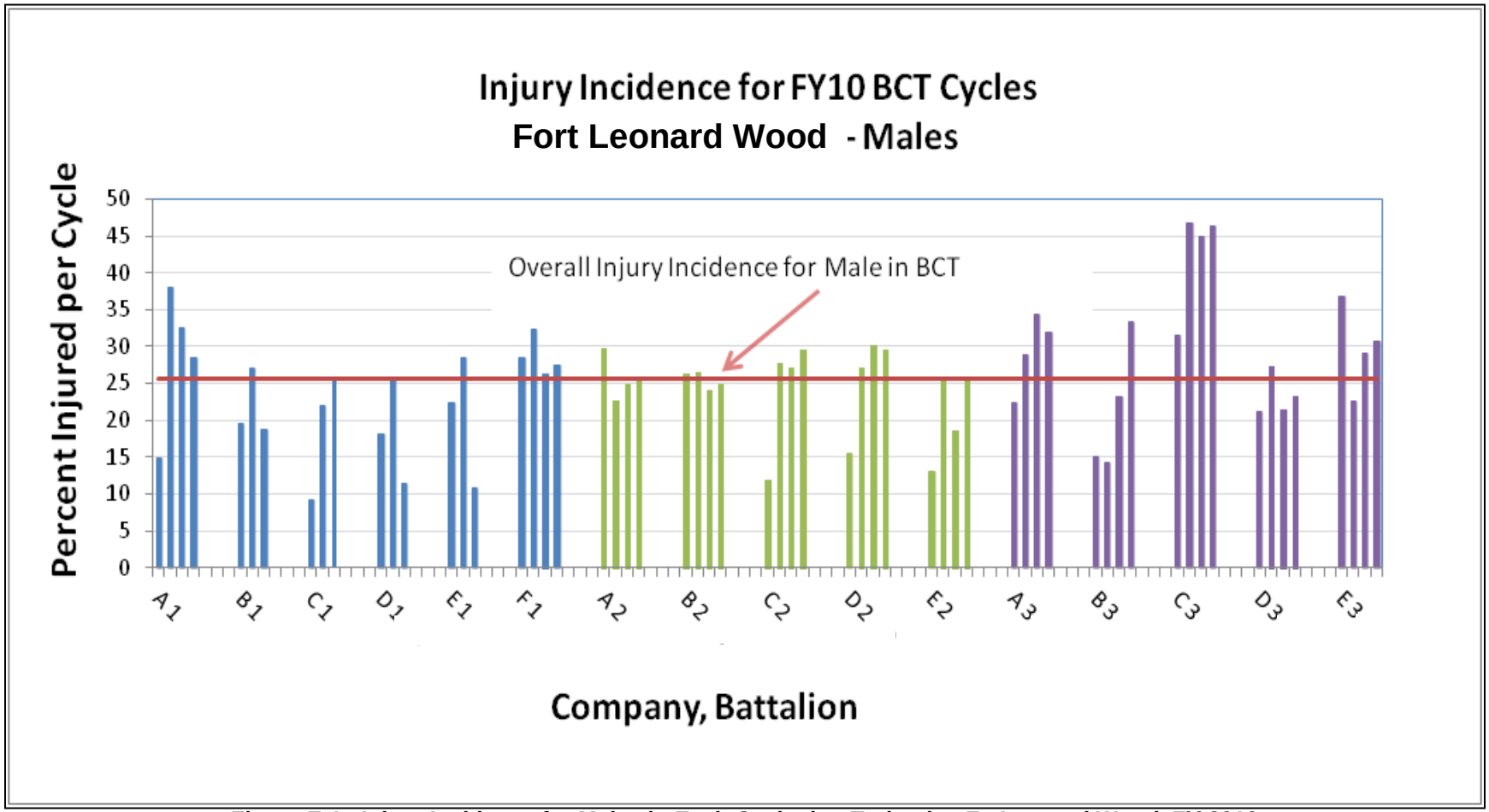


Figure E-1. Injury Incidence for Males in Each Cycle that Trained at Ft. Leonard Wood, FY 2010

Appendix F

Deaths among Active Duty Army Soldiers, 2000-2010

INFORMATION PAPER

MCHB-IP-DI
7 June 2012

SUBJECT: Deaths among Active Duty Army Soldiers, 2000-2010

1. Purpose: To describe the trends and causes of deaths among Active Duty Army Soldiers from 2000 through 2010.

2. Facts:

a. In support of the Soldier Medical Readiness Campaign Plan Initiative 4.3 (Improve Medical Readiness Surveillance) and to provide leadership with summaries of key medical outcomes associated with readiness, analyses were conducted to provide insight into causes of Army deaths for 2000-2010.

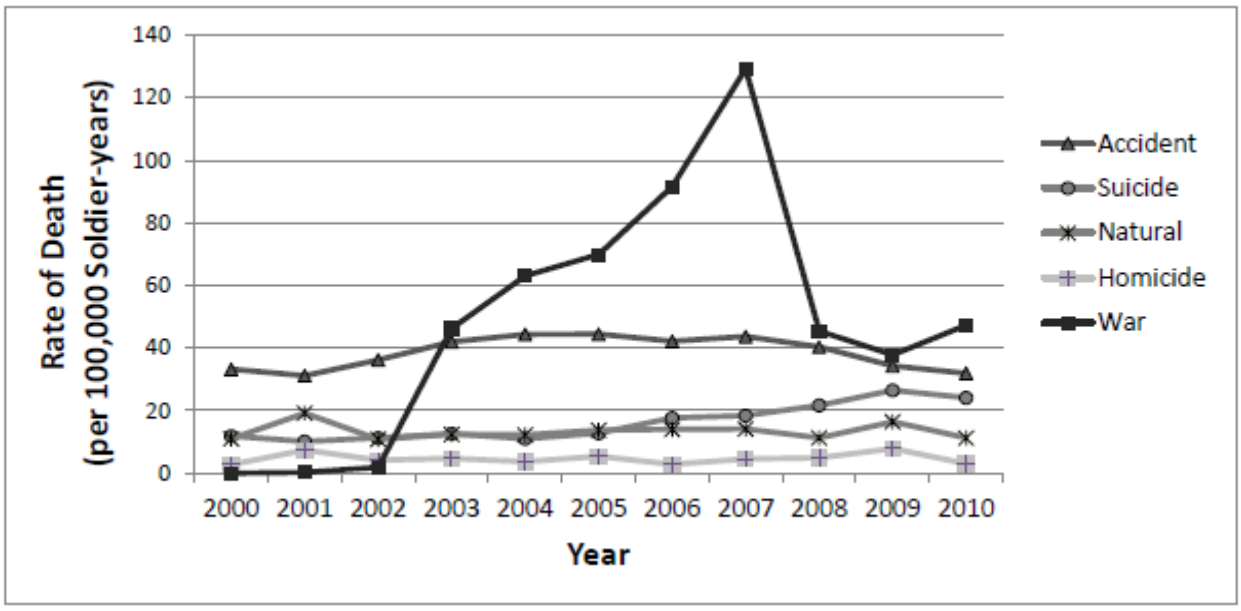
b. The number of Active Duty Army deaths by manner and by specific cause were obtained from the Defense Medical Surveillance System, which maintains casualty data from the Armed Forces Medical Examiner System (AFMES). Rates were calculated using annual Active Duty Army person-years obtained from the Defense Medical Epidemiology Database. Proportions and rates of death are reported for 2000 to 2010, the most recent year for which data were available.

c. Among Active Duty Army Soldiers, there were between 289 and 1,086 deaths annually from 2000 to 2010. Accidents were the leading cause of death from 2000 to 2002, surpassed by war-related deaths in 2003 (Figure 1). Accident rates declined 28% from 2005 (44.4 per 100,000 Soldier-years) to 2010 (32.0 per 100,000 Soldier-years). From 2002 to 2007, war-related deaths increased from 1.9 per 100,000 Soldiers to a peak of 129.3 per 100,000 Soldiers, then declined 65% from 2007 to 2008, to remain at an average rate of 43.5 per 100,000 Soldiers from 2008 to 2010.

d. Suicide and motor vehicle accidents were among the top 3 causes of death across the 11-year time period examined (Figure 2). From 2004 to 2009 suicide-related deaths as reported in the AFMES increased from 11.0 per 100,000 Soldiers to 24.1 per 100,000 Soldiers (120% increase). Motor vehicle-related deaths increased from 2001 to 2004 (60% increase) and decreased from 2004 to 2010 (56% decrease). In 2010 (Figure 3), the leading cause of Active Duty Army deaths was war-related (38%), followed by suicide (19%) and motor vehicles (13%). Among deaths due to unintentional (accidental) injury (Figure 4), leading specific causes in 2010 were motor vehicles (50%), drugs/alcohol (23%), and aviation (7%).

Injury Prevention Program/ (410)436-4655

Approved by: Director, Army Institute of Public Health



Note: *Excludes undetermined (1% of total), unknown (4% of total), and categories with fewer than 5 deaths/year
Data source: Defense Medical Surveillance System, Armed Forces Medical Examiner, 2012

Figure F-1. Annual Death Rates by Manner of Death U.S. Army Active Duty, 2000-2010

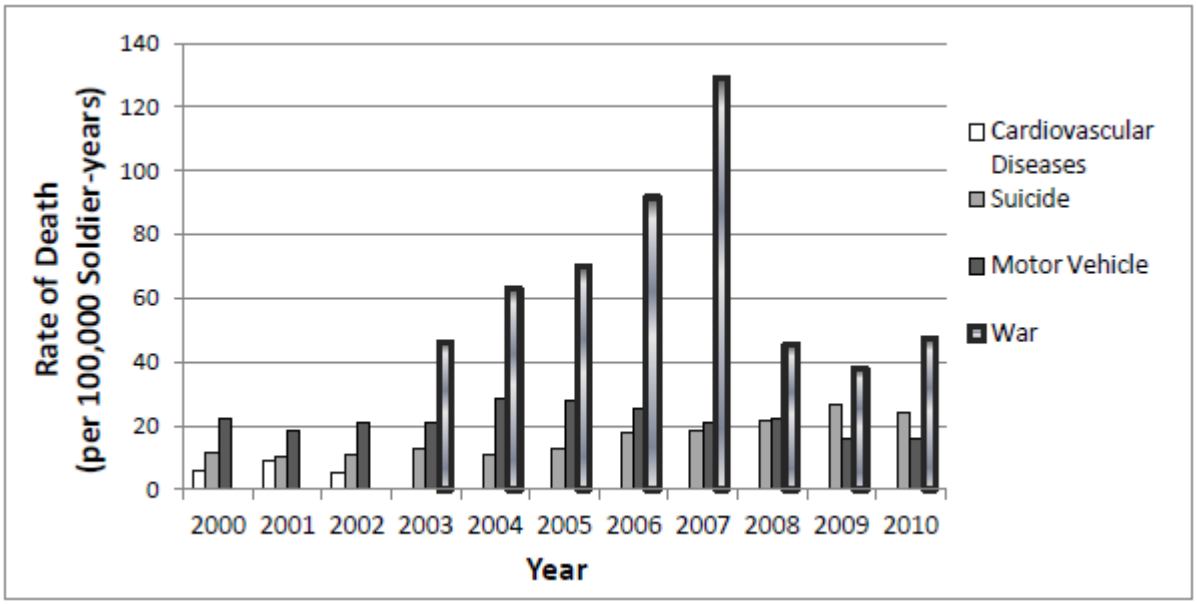
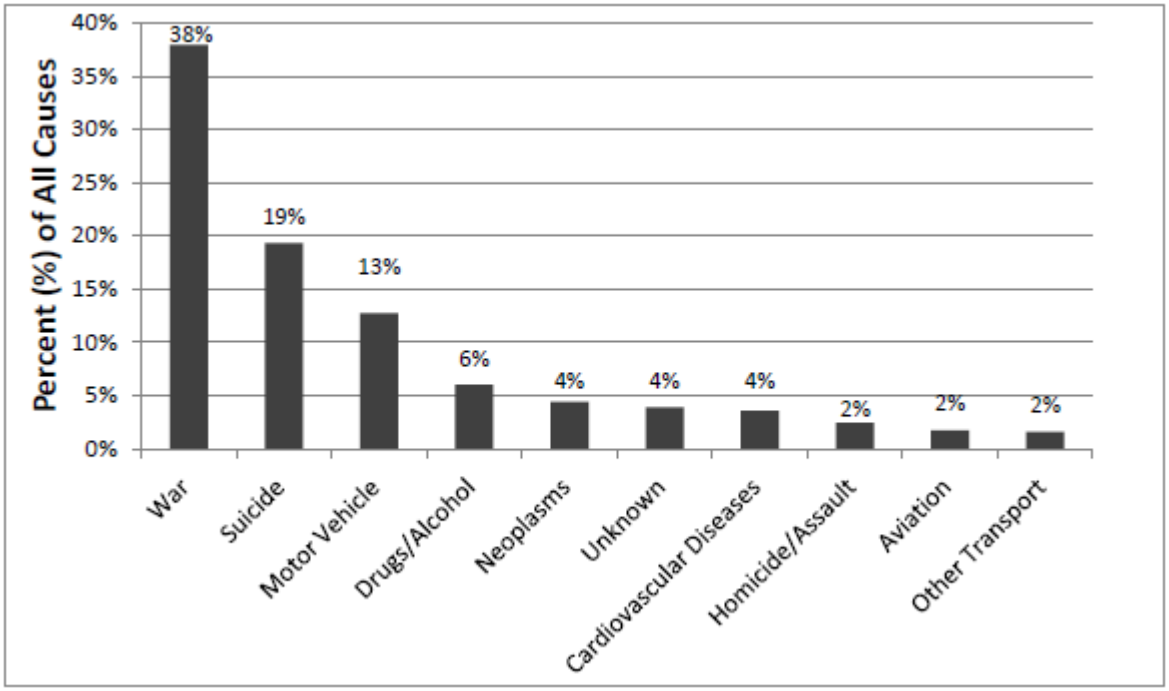
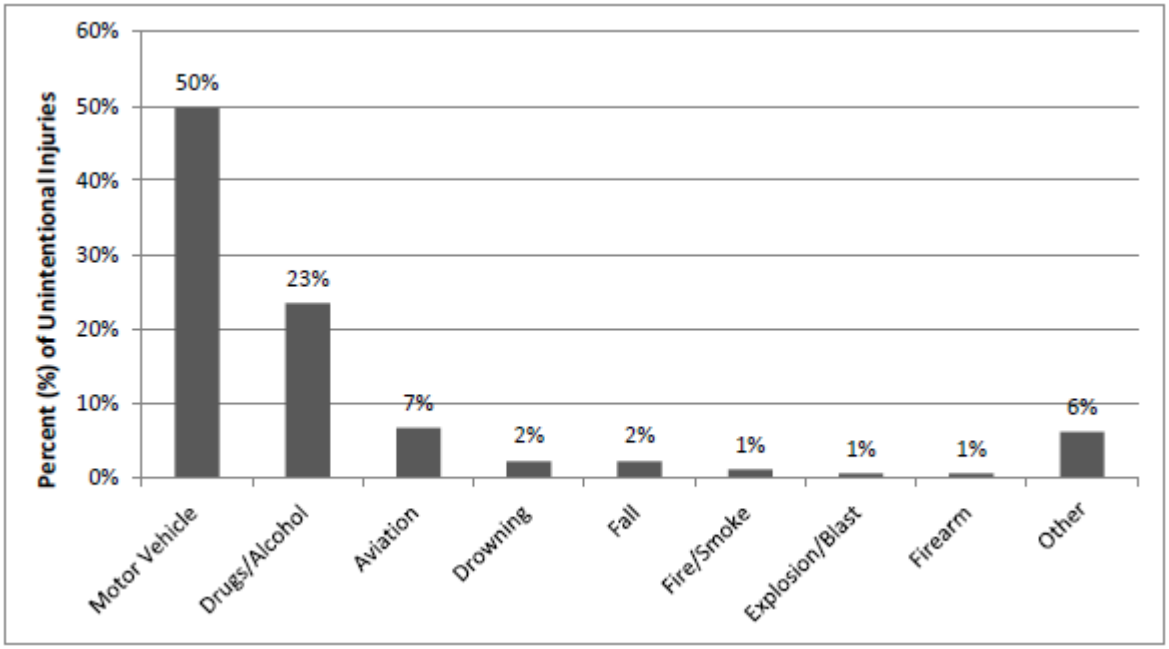


Figure F-2. Top 3 Specific Causes of Death, U.S. Army Active Duty, 2000-2010



*n = 698 total deaths in 2010
Data source: Defense Medical Surveillance System, Armed Forces Medical Examiner, 2012

Figure F-3. Leading Specific Causes of Death, U.S. Army Active Duty, 2010



*n = 179 unintentional injury-related deaths in 2010; Other includes unspecified transport, non-transport, and illnesses-related deaths
Data source: Defense Medical Surveillance System, Armed Forces Medical Examiner, 2012

Figure F-4. Leading Specific Causes of Death due to Unintentional Injuries, U.S. Army Active Duty, 2010

Appendix G

Summary of Medical Encounters among Nondeployed Active Duty Army Soldiers, 2012

INFORMATION PAPER

MCHB-IP-DI
20 November 2013

SUBJECT: Summary of Medical Encounters among Nondeployed Active Duty Army Soldiers, 2012

1. Purpose: To describe leading reasons for Active Duty Army medical encounters, with a focus on injuries.

2. Facts:

a. Soldier Medical Readiness Campaign Plan strategic objective 4.0 (Optimize Medical Readiness Surveillance Capability) aims to identify leading barriers to medical readiness through existing medical and administrative data. This information, provided to leadership, will inform data-driven decisions regarding next steps for clinical and prevention efforts. Information papers summarizing leading causes of death and disability were previously provided.

b. Medical encounter data from the Defense Medical Surveillance System were requested from the Armed Forces Health Surveillance Center. Injuries resulting in hospitalization and outpatient treatment were identified by International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) primary diagnosis codes from the 800-999 code series for acute traumatic injuries and selected diagnoses from the 710-739 code series for injury-related musculoskeletal conditions. All data on medical conditions other than injuries were reported according to the 17 major diagnosis code groups outlined in ICD-9-CM.

c. The relative burden of injuries and diseases was characterized by three indicators: the total number of medical encounters, the number of individuals with one or more of a particular diagnosis, and the number of hospital bed days for each major diagnosis group. Rates and trends of overall injuries are reported for all nondeployed Active Duty Army Soldiers and Army trainees for 2007 to 2012. The distributions of injury types and leading causes of unintentional injuries for hospitalizations and outpatient visits are also presented for 2012. North Atlantic Treaty Organization (NATO) Standardization Agreement (STANAG) 2050: Statistical Classification of Diseases, Injuries and Causes of Death (1989) and ICD-9-CM external cause of injury codes are reported for coding hospitalizations and outpatient visits, respectively.

d. In 2012, injuries were the leading cause of medical encounters, resulting in over 1.3 million encounters (28% of all encounters), 19% more encounters than the second leading cause, mental disorders (n=1,087,961, 23%) (Figure 1). In 2012, injuries affected 307,854 Soldiers (21%), 29% more individuals than the second leading diagnosis group, ill-defined conditions (n=218,344, 15%). Mental disorders (n=111,092) accounted for the most hospital bed days, followed by injuries (n=30,869).

e. The Active Duty injury rate fluctuated only slightly from 2007-2012 with an average rate of 1,299 medical encounters per 1,000 Soldiers per year (Figure 2). The trainee injury rate decreased 22% from 2,842 medical encounters per 1,000 Soldiers per year in 2007 to 2,229 encounters per 1,000 Soldiers per year in 2009. Trainee injury rates were relatively stable from 2010 to 2012, averaging 2,268 medical encounters per 1,000 Soldiers per year.

f. In 2012, the leading types of hospitalized acute injuries were fractures (45%), internal injuries (16%), and open wounds (10%) (Table 1). Nearly 46% of outpatient acute injuries were the result of sprains/strains, 17% were due to contusions/ superficial wounds, and 9% were fractures.

g. In 2012, the most common types of injury-related musculoskeletal conditions leading to hospitalization were joint derangement (58%), inflammation and pain (23%), and joint derangement with neurological involvement (12%) (Table 2). Most musculoskeletal conditions resulting in outpatient visits involved inflammation and pain due to overuse (87%), followed by joint derangement (8%), and joint derangement with neurological involvement (3%).

h. Over one-third of unintentional injury cause-coded hospitalizations were due to land transport accidents (20%) and falls (16%) in 2012 (Figure 3). Land transport-related hospitalizations were, more specifically, attributed to the following: nonmilitary vehicle accidents (16%), motor vehicle nontraffic accidents (2%), military vehicle accidents (2%), and other land transport (0.1%). While land transport-related injuries include accidents involving bicycle and railways, the majority of these injuries were linked to motor vehicles.

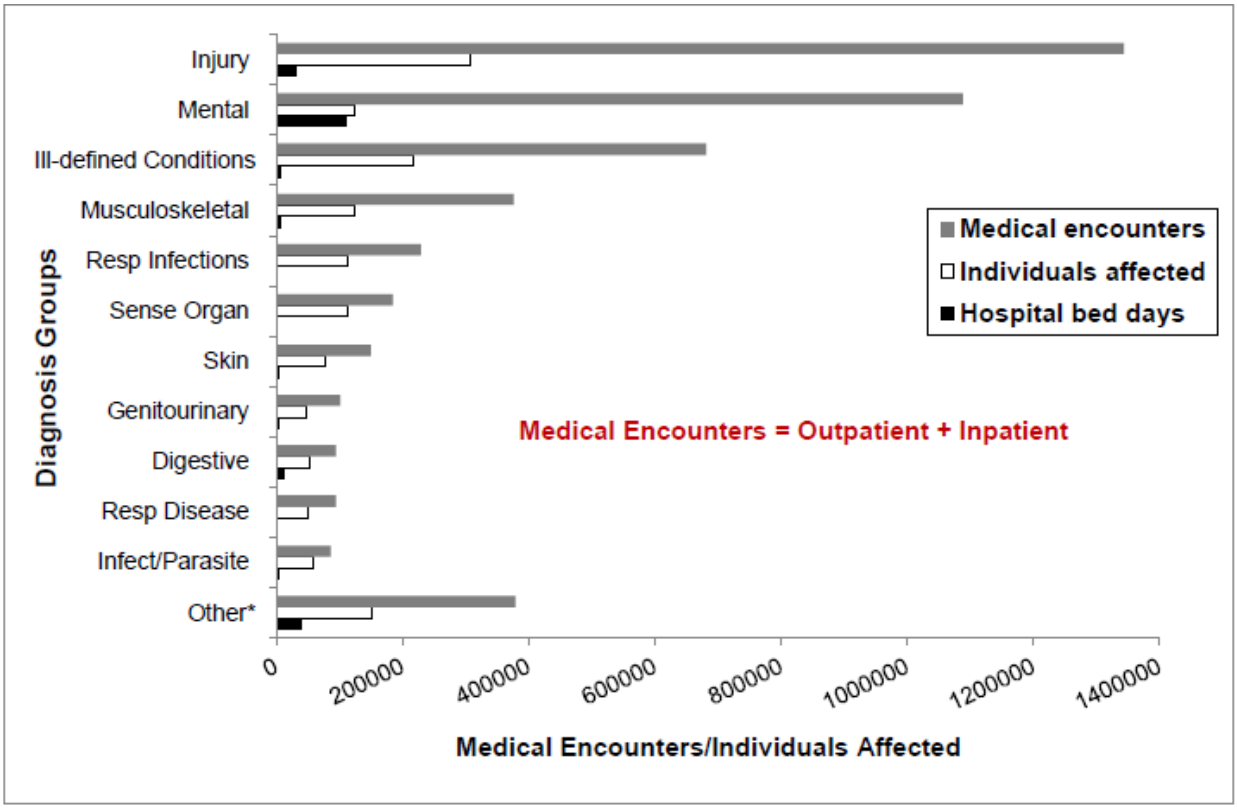
i. Nearly 60 percent of unintentional injury cause-coded outpatient visits were attributed to overexertion (27%), fall-related injuries (16%) and injuries due to Soldiers being struck by or against objects or persons (16%) in 2012 (Figure 4). Another 12% of unintentional injury cause-coded outpatient visits resulted from transport-related accidents.

3. Conclusions:

Injuries and mental health conditions were the leading reasons for medical encounters and hospital bed days among U.S. Army Active Duty Soldiers in 2012. To improve military medical readiness, efforts should continue to address prevention of injury and mental health issues. To decrease injuries, efforts should focus on prevention of leading causes, including overexertion, falls, and transport-related accidents.

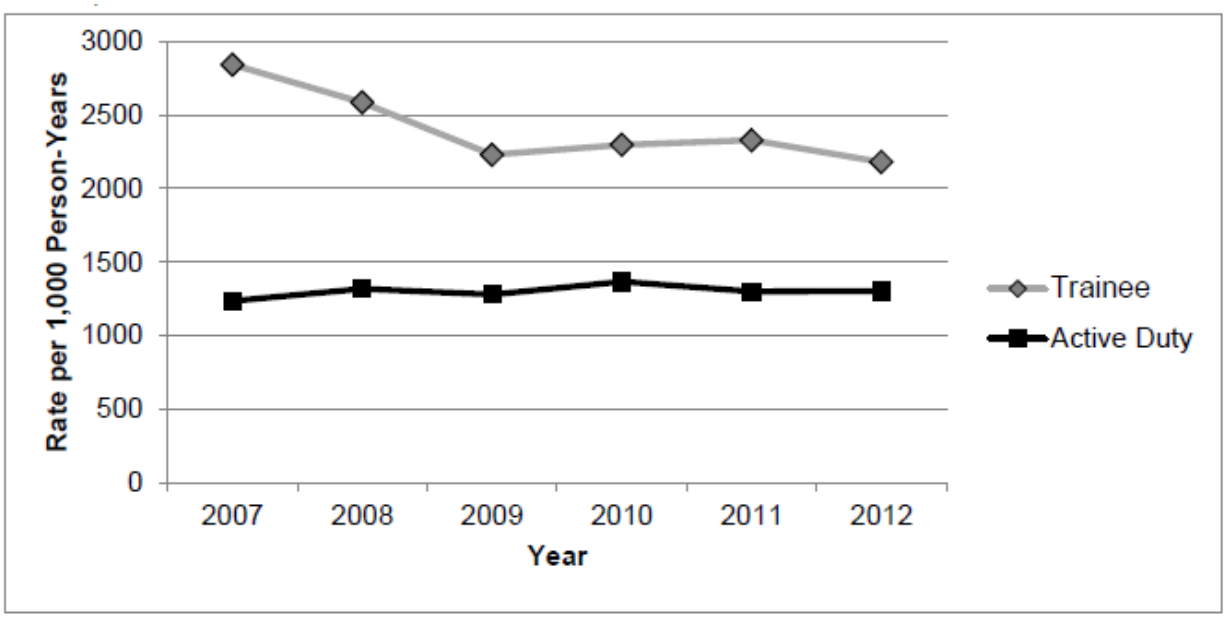
Injury Prevention Program/ (410)436-4655

Approved by: Director, Army Institute of Public Health



Data source: Defense Medical Surveillance System, 2013
*Other includes all ICD-9-CM code groups with less than 80,000 medical encounters.
Diagnosis group Injury contains both injury and musculoskeletal-related injuries.

Figure G-1. Relative Burden of Injuries and Diseases, U.S. Army Active Duty, 2012



Data source: Defense Medical Surveillance System, 2013
Active Duty injury rates do not include injuries during deployment or deployed person-time.

Figure G-2. U.S. Army Active Duty and Trainee Overall Injury Medical Encounter Rates, 2007-2012

Table G-1. Frequency of Acute Injury Types for Hospitalizations and Outpatient Visits, U.S. Army Active Duty, 2012

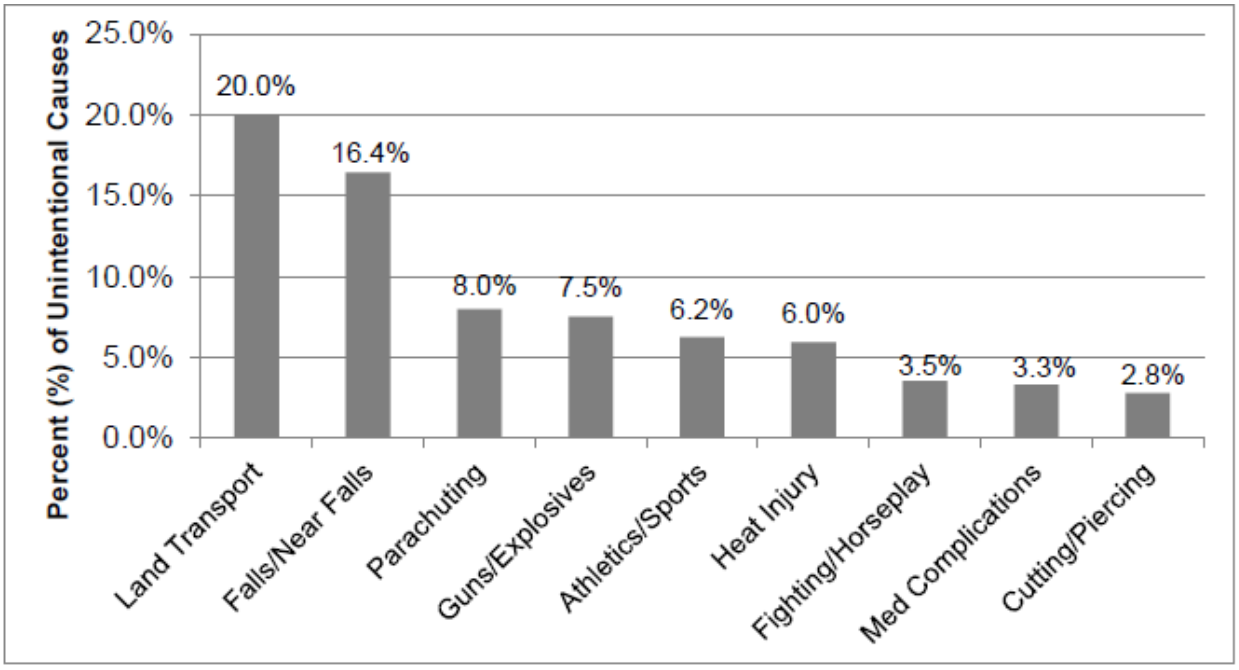
Injury Type	Hospitalizations		Outpatient Visits	
	Number	Percent (Rank)	Number	Percent (Rank)
Fracture	1,396	45.1 (1)	21,328	8.9 (3)
Internal	497	16.1 (2)	7,886	3.3 (6)
Open Wound	306	9.9 (3)	20,028	8.3 (4)
Sprains/Strains	165	5.3 (4)	109,726	45.7 (1)
Contusion/Superficial	121	3.9 (5)	41,005	17.1 (2)
Dislocation	117	3.8 (6)	8,092	3.4 (5)
Burns	67	2.2 (7)	2,382	1.0 (7)
Amputations	33	1.1 (8)	575	0.2 (10)
Crush	20	0.6 (9)	1,032	0.4 (8)
Blood Vessel	19	0.6 (10)	139	0.1 (11)
Nerves	13	0.4 (11)	960	0.4 (9)
System-wide/late effects	208	6.7 (–)	5,500	2.3 (–)
Unspecified	131	4.2 (–)	21,646	9.0 (–)
Total	**3,093**	**100 (–)**	**240,299**	**100 (–)**

Data source: Defense Medical Surveillance System, 2013
Primary diagnosis only included and injuries during deployment excluded. Incident rule is >60 days from preceding visit for the same diagnosis (identified using 3-digit ICD-9-CM code).

Table G-2. Frequency of Injury-Related Musculoskeletal Conditions for Hospitalizations and Outpatient Visits, U.S. Army Active Duty, 2012

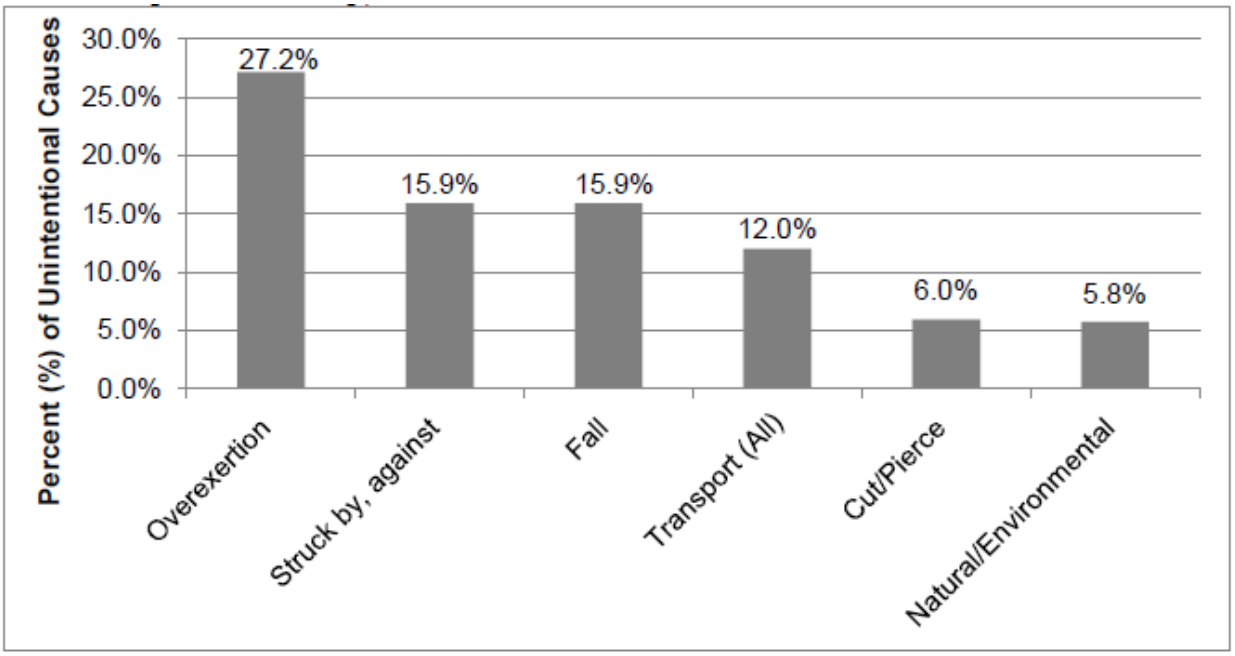
Injury Type	Hospitalizations		Outpatient Visits	
	Number	Percent (Rank)	Number	Percent (Rank)
Joint Derangement	964	57.6 (1)	32,743	7.9 (2)
Inflammation and Pain (Overuse)	376	22.5 (2)	358,574	86.7 (1)
Joint Derangement with Neurological Involvement	197	11.8 (3)	13,056	3.2 (3)
Sprains/Strains/Rupture	113	6.8 (4)	4,365	1.1 (4)
Dislocation	16	1.0 (5)	882	0.2 (6)
Stress Fracture	8	0.5 (6)	3,846	0.9 (5)
Total	**1,674**	100 (–)	**413,466**	100 (–)

Data source: Defense Medical Surveillance System, 2013
Primary diagnosis only included and injuries during deployment excluded. Incident rule is >60 days from preceding visit for the same diagnosis (identified using 3-digit ICD-9-CM code).



Data source: Defense Medical Surveillance System, 2013
Cause-coded unintentional injury hospitalizations= 1,778 (38% of total acute injury hospitalizations).
Primary diagnosis only included and injuries during deployment excluded. Incident rule is >60 days from preceding visit for the same diagnosis (identified using 3-digit ICD-9-CM code).

Figure G-3. Leading Causes of Unintentional Injury Hospitalizations by Cause, U.S. Army Active Duty, 2012



Data source: Defense Medical Surveillance System, 2013
Cause-coded unintentional outpatient visits=83,064 (32% of total acute injury outpatient visits).
Primary diagnosis only included and injuries during deployment excluded. Incident rule is >60 days from preceding visit for the same diagnosis (identified using 3-digit ICD-9-CM code).

Figure G-4. Leading Causes of Unintentional Injury Outpatient Visits by Cause, U.S. Army Active Duty, 2012

Appendix H

Disability Discharges for Regular Army and Reserve/National Guard Soldiers, 2000-2010

INFORMATION PAPER

MCHB-IP-DI
7 December 2011

SUBJECT: Disability Discharges for Regular Army and Reserve/National Guard Soldiers, 2000-2010

1. Purpose: To describe the types of and temporal changes in disability discharges among Regular Army and Reserve/National Guard Soldiers from 2000 through 2010

2. Facts:

a. In support of the Soldier Medical Readiness Campaign Plan Initiative 4.3 (Improve Medical Readiness Surveillance), analyses were conducted to provide insight into reasons for Army medical discharges and to describe trends in Army medical disability discharges for 2000-2010. Detailed data are provided in the attached tables.

b. Data were obtained from the Physical Disability Computer Processing System, a database maintained by the U.S. Army Physical Disability Agency. Counts, proportions, and rates for all Regular Army personnel were calculated by major medical categories and the Top 10 specific medical conditions. The same analysis was conducted for Reserve and National Guard personnel, with the exception of rates. Rates for Reserve and National Guard personnel were not calculated since exact annual population and time-on-duty data were not known.

c. Among Regular Army Soldiers there were between 5,500 and 8,700 disability discharges annually from 2000 to 2010. Discharge rates declined 11% during this period, from 162 to 144 per 10,000 Soldiers. Musculoskeletal conditions were the most common diagnoses associated with discharge (62%), followed by mental disorders (15%). Mental disorders was the only category that increased since 2000, accounting for 3 out of every 10 discharges by 2010. Within this category, discharges for posttraumatic stress disorder increased 30-fold since 2000.

d. For Reserve/National Guard Soldiers, the number of disability discharges has varied from approximately 700 to over 2,500 annually. The total number of discharges more than tripled from 724 in 2000 to 2,673 in 2010. In 2010, mental disorders (n=1,036, 39%) surpassed musculoskeletal disorders (n= 979, 37%) as the leading cause of medical discharges for the first time. From 2000 to 2009, musculoskeletal conditions were the leading cause of Reserve and National Guard discharges, accounting for over 50% of discharges on average.

Injury Prevention Program/ (410)436-4655

Approved by: Director, Army Institute of Public Health

Table 1a. Incidence of Disability Discharges by Major Medical Category, Regular Army, 2000-2010[a,b]

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %
Musculoskeletal	4717 (61.7)	4336 (66.6)	3815 (69.1)	4026 (67.0)	5004 (66.8)	5293 (68.3)	4641 (66.8)	4830 (63.7)	4867 (57.4)	4290 (49.2)	3825 (47.4)	49644 (61.5)
Mental Disorder	645 (8.4)	449 (6.9)	302 (5.5)	385 (6.4)	535 (7.1)	631 (8.1)	670 (9.6)	1074 (14.2)	1751 (20.7)	2735 (31.3)	2725 (33.8)	11902 (14.7)
Neurological	722 (9.4)	525 (8.1)	432 (7.8)	492 (8.2)	697 (9.3)	641 (8.3)	601 (8.6)	683 (9.0)	798 (9.4)	789 (9.0)	663 (8.2)	7043 (8.7)
Systemic/Respiratory	733 (9.6)	594 (9.1)	467 (8.5)	499 (8.3)	581 (7.8)	465 (6.0)	326 (4.7)	309 (4.1)	307 (3.6)	270 (3.1)	284 (3.5)	4835 (6.0)
Blood/Skin/Endocrine	231 (3.0)	165 (2.5)	147 (2.7)	194 (3.2)	237 (3.2)	233 (3.0)	218 (3.1)	186 (2.5)	197 (2.3)	190 (2.2)	169 (2.1)	2167 (2.7)
Digestive	203 (2.7)	138 (2.1)	90 (1.6)	112 (1.9)	100 (1.3)	106 (1.4)	82 (1.2)	90 (1.2)	113 (1.3)	127 (1.5)	106 (1.3)	1267 (1.6)
Cardiovascular	149 (1.9)	105 (1.6)	96 (1.7)	106 (1.8)	104 (1.4)	82 (1.1)	91 (1.3)	106 (1.4)	98 (1.2)	96 (1.1)	96 (1.2)	1129 (1.4)
Visual/Auditory	86 (1.1)	71 (1.1)	52 (0.9)	80 (1.3)	108 (1.4)	137 (1.8)	133 (1.9)	121 (1.6)	113 (1.3)	99 (1.1)	80 (1.0)	1080 (1.3)
Genitourinary	118 (1.5)	77 (1.2)	72 (1.3)	72 (1.2)	86 (1.1)	74 (1.0)	71 (1.0)	55 (0.7)	82 (1.0)	82 (0.9)	65 (0.8)	854 (1.1)
Dental	3 (0.0)	2 (0.0)	4 (0.1)	2 (0.0)	4 (0.1)	3 (0.0)	3 (0.0)	3 (0.0)	2 (0.0)	2 (0.0)	3 (0.0)	31 (0.0)
Unknown	44 (0.6)	46 (0.7)	43 (0.8)	40 (0.7)	35 (0.5)	85 (1.1)	118 (1.7)	130 (1.7)	151 (1.8)	60 (0.7)	55 (0.7)	807 (1.0)
Total	7650	6508	5520	6007	7486	7747	6950	7584	8478	8728	8065	80723

[a]Medical condition categories are based on Veterans Adminstration Schedule for Rating Disabilities (VASRD) code groups (2-Digit Level)

[b]based on first record in PDCAPS

Table 1b. Incidence of Disability Discharges by Major Medical Category, Regular Army, 2000-2010[a,b] – Males only

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %
Musculoskeletal	3564 (61.6)	3248 (65.9)	2855 (68.6)	2937 (65.7)	3743 (65.3)	4020 (66.3)	3684 (65.7)	3852 (61.7)	3908 (55.6)	3459 (46.9)	3071 (45.7)	38341 (59.8)
Mental Disorder	473 (8.2)	333 (6.8)	225 (5.4)	308 (6.9)	442 (7.7)	545 (9.0)	588 (10.5)	946 (15.1)	1573 (22.4)	2478 (33.6)	2377 (35.4)	10288 (16.0)
Neurological	563 (9.7)	414 (8.4)	348 (8.4)	405 (9.1)	573 (10.0)	547 (9.0)	497 (8.9)	590 (9.4)	695 (9.9)	675 (9.2)	554 (8.3)	5861 (9.1)
Systemic/Respiratory	541 (9.4)	436 (8.8)	345 (8.3)	336 (7.5)	436 (7.6)	348 (5.7)	240 (4.3)	252 (4.0)	231 (3.3)	223 (3.0)	225 (3.4)	3613 (5.6)
Blood/Skin/Endocrine	189 (3.3)	143 (2.9)	129 (3.1)	161 (3.6)	202 (3.5)	200 (3.3)	187 (3.3)	166 (2.7)	171 (2.4)	169 (2.3)	144 (2.1)	1861 (2.9)
Digestive	150 (2.6)	110 (2.2)	71 (1.7)	90 (2.0)	76 (1.3)	88 (1.5)	63 (1.1)	73 (1.2)	90 (1.3)	104 (1.4)	94 (1.4)	1009 (1.6)
Visual/Auditory	77 (1.3)	63 (1.3)	45 (1.1)	74 (1.7)	96 (1.7)	133 (2.2)	123 (2.2)	115 (1.8)	107 (1.5)	92 (1.2)	76 (1.1)	1001 (1.6)
Cardiovascular	108 (1.9)	89 (1.8)	74 (1.8)	87 (1.9)	82 (1.4)	65 (1.1)	82 (1.5)	97 (1.6)	85 (1.2)	78 (1.1)	78 (1.2)	925 (1.4)
Genitourinary	80 (1.4)	54 (1.1)	36 (0.9)	41 (0.9)	54 (0.9)	39 (0.6)	42 (0.7)	32 (0.5)	48 (0.7)	55 (0.7)	49 (0.7)	530 (0.8)
Dental	1 (0.0)	2 (0.0)	3 (0.1)	2 (0.0)	3 (0.1)	3 (0.0)	0 (0.0)	3 (0.0)	1 (0.0)	2 (0.0)	3 (0.0)	23 (0.0)
Unknown	39 (0.7)	36 (0.7)	31 (0.7)	29 (0.6)	23 (0.4)	73 (1.2)	102 (1.8)	120 (1.9)	123 (1.7)	39 (0.5)	44 (0.7)	659 (1.0)
Total	5785	4928	4162	4470	5730	6061	5608	6246	7032	7374	6715	64111

[a]Medical condition categories are based on Veterans Adminstration Schedule for Rating Disabilities (VASRD) code groups (2-Digit Level)

[b]based on first record in PDCAPS

Table 1c. Incidence of Disability Discharges by Major Medical Category, Regular Army, 2000-2010[a,b] – Females only

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %
Musculoskeletal	1153 (61.9)	1088 (68.9)	960 (70.7)	1089 (70.9)	1258 (71.8)	1271 (75.5)	955 (71.4)	977 (73.2)	958 (66.3)	826 (61.5)	751 (55.9)	11286 (68.1)
Mental Disorder	172 (9.2)	116 (7.3)	77 (5.7)	77 (5.0)	93 (5.3)	86 (5.1)	81 (6.1)	128 (9.6)	178 (12.3)	251 (18.7)	346 (25.7)	1605 (9.7)
Systemic/Respiratory	192 (10.3)	158 (10.0)	122 (9.0)	163 (10.6)	145 (8.3)	117 (7.0)	86 (6.4)	56 (4.2)	76 (5.3)	47 (3.5)	59 (4.4)	1221 (7.4)
Neurological	159 (8.5)	111 (7.0)	84 (6.2)	86 (5.6)	123 (7.0)	93 (5.5)	104 (7.8)	92 (6.9)	103 (7.1)	113 (8.4)	109 (8.1)	1177 (7.1)
Genitourinary	38 (2.0)	23 (1.5)	36 (2.7)	31 (2.0)	32 (1.8)	35 (2.1)	28 (2.1)	23 (1.7)	34 (2.4)	27 (2.0)	16 (1.2)	323 (1.9)
Blood/Skin/Endocrine	42 (2.3)	22 (1.4)	18 (1.3)	33 (2.1)	35 (2.0)	33 (2.0)	31 (2.3)	20 (1.5)	26 (1.8)	21 (1.6)	24 (1.8)	305 (1.8)
Digestive	53 (2.8)	28 (1.8)	19 (1.4)	22 (1.4)	24 (1.4)	18 (1.1)	19 (1.4)	17 (1.3)	23 (1.6)	23 (1.7)	12 (0.9)	258 (1.6)
Cardiovascular	40 (2.1)	16 (1.0)	22 (1.6)	19 (1.2)	22 (1.3)	17 (1.0)	9 (0.7)	9 (0.7)	13 (0.9)	18 (1.3)	18 (1.3)	203 (1.2)
Visual/Auditory	9 (0.5)	8 (0.5)	7 (0.5)	6 (0.4)	11 (0.6)	4 (0.2)	10 (0.7)	6 (0.4)	6 (0.4)	7 (0.5)	4 (0.3)	78 (0.5)
Dental	2 (0.1)	0 (0.0)	1 (0.1)	0 (0.0)	1 (0.1)	0 (0.0)	3 (0.2)	0 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)	8 (0.0)
Unknown	4 (0.2)	10 (0.6)	12 (0.9)	10 (0.7)	7 (0.4)	9 (0.5)	12 (0.9)	7 (0.5)	27 (1.9)	9 (0.7)	5 (0.4)	112 (0.7)
Total	1864	1580	1358	1536	1751	1683	1338	1335	1445	1342	1344	16576

[a]Medical condition categories are based on Veterans Adminstration Schedule for Rating Disabilities (VASRD) code groups (2-Digit Level)

[b]based on first record in PDCAPS

Source: Physical Disability Computer Assisted Processing System (PDCAPS), 2010. Prepared by U.S. Army Institute of Public Health, Injury Prevention Program.

Table 2a. Incidence Rates of Disability Discharges by Major Medical Category, Regular Army, 2000-2010[a,b]

	2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		Total	
	n	(Rate[b])	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)
Musculoskeletal	4717	(99.7)	4336	(91.4)	3815	(79.3)	4026	(82.1)	5004	(101.8)	5293	(108.9)	4641	(94.1)	4830	(94.6)	4867	(91.7)	4290	(78.4)	3825	(68.3)	49644	(89.6)
Mental Disorder	645	(13.6)	449	(9.5)	302	(6.3)	385	(7.9)	535	(10.9)	631	(13.0)	670	(13.6)	1074	(21.0)	1751	(33.0)	2735	(50.0)	2725	(48.6)	11902	(21.5)
Neurological	722	(15.3)	525	(11.1)	432	(9.0)	492	(10.0)	697	(14.2)	641	(13.2)	601	(12.2)	683	(13.4)	798	(15.0)	789	(14.4)	663	(11.8)	7043	(12.7)
Systemic/Respiratory	733	(15.5)	594	(12.5)	467	(9.7)	499	(10.2)	581	(11.8)	465	(9.6)	326	(6.6)	309	(6.1)	307	(5.8)	270	(4.9)	284	(5.1)	4835	(8.7)
Blood/Skin/Endocrine	231	(4.9)	165	(3.5)	147	(3.1)	194	(4.0)	237	(4.8)	233	(4.8)	218	(4.4)	186	(3.6)	197	(3.7)	190	(3.5)	169	(3.0)	2167	(3.9)
Digestive	203	(4.3)	138	(2.9)	90	(1.9)	112	(2.3)	100	(2.0)	106	(2.2)	82	(1.7)	90	(1.8)	113	(2.1)	127	(2.3)	106	(1.9)	1267	(2.3)
Cardiovascular	149	(3.2)	105	(2.2)	96	(2.0)	106	(2.2)	104	(2.1)	82	(1.7)	91	(1.8)	106	(2.1)	98	(1.8)	96	(1.8)	96	(1.7)	1129	(2.0)
Visual/Auditory	86	(1.8)	71	(1.5)	52	(1.1)	80	(1.6)	108	(2.2)	137	(2.8)	133	(2.7)	121	(2.4)	113	(2.1)	99	(1.8)	80	(1.4)	1080	(2.0)
Genitourinary	118	(2.5)	77	(1.6)	72	(1.5)	72	(1.5)	86	(1.7)	74	(1.5)	71	(1.4)	55	(1.1)	82	(1.5)	82	(1.5)	65	(1.2)	854	(1.5)
Dental	3	(0.1)	2	(0.0)	4	(0.1)	2	(0.0)	4	(0.1)	3	(0.1)	3	(0.1)	3	(0.1)	2	(0.0)	2	(0.0)	3	(0.1)	31	(0.1)
Unknown	44	(0.9)	46	(1.0)	43	(0.9)	40	(0.8)	35	(0.7)	85	(1.7)	118	(2.4)	130	(2.5)	151	(2.8)	60	(1.1)	55	(1.0)	801	(1.4)
Total	7650	(161.8)	6508	(137.2)	5520	(114.8)	6007	(122.5)	7486	(152.3)	7747	(159.3)	6950	(141.0)	7584	(148.5)	8478	(159.8)	8728	(159.4)	8065	(144.0)	80723	(145.8)
Total Army Person Years	472904		474363		480853		490406		491482		486255		492990		510587		530522		547511		560187		5538060	

[a]Based on first record in PDCAPS. Medical condition categories based on Veterans Adminstration Schedule for Rating Disabilities (VASRD) code (2-digit Level)

[b]Rate per 10,000 Soldiers

Table 2b. Incidence Rates of Disability Discharges by Major Medical Category, Regular Army, 2000-2010[a,b] -- Males only

	2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		Total	
	n	(Rate[b])	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)
Musculoskeletal	3564	(88.8)	3248	(80.9)	2855	(70.2)	2937	(70.6)	3743	(89.4)	4020	(96.5)	3684	(86.9)	3852	(87.5)	3908	(85.2)	3459	(73.0)	3071	(63.3)	38341	(88.3)
Mental Disorder	473	(11.8)	333	(8.3)	225	(5.5)	308	(7.4)	442	(10.6)	545	(13.1)	588	(13.9)	946	(21.5)	1573	(34.3)	2478	(52.3)	2377	(49.0)	10288	(23.7)
Neurological	563	(14.0)	414	(10.3)	348	(8.6)	405	(9.7)	573	(13.7)	547	(13.1)	497	(11.7)	590	(13.4)	695	(15.2)	675	(14.2)	554	(11.4)	5861	(13.5)
Systemic/Respiratory	541	(13.5)	436	(10.9)	345	(8.5)	336	(8.1)	436	(10.4)	348	(8.4)	240	(5.7)	252	(5.7)	231	(5.0)	223	(4.7)	225	(4.6)	3613	(8.3)
Blood/Skin/Endocrine	189	(4.7)	143	(3.6)	129	(3.2)	161	(3.9)	202	(4.8)	200	(4.8)	187	(4.4)	166	(3.8)	171	(3.7)	169	(3.6)	144	(3.0)	1861	(4.3)
Digestive	150	(3.7)	110	(2.7)	71	(1.7)	90	(2.2)	76	(1.8)	88	(2.1)	63	(1.5)	73	(1.7)	90	(2.0)	104	(2.2)	94	(1.9)	1009	(2.3)
Visual/Auditory	77	(1.9)	63	(1.6)	45	(1.1)	74	(1.8)	96	(2.3)	133	(3.2)	123	(2.9)	115	(2.6)	107	(2.3)	92	(1.9)	76	(1.6)	1001	(2.3)
Cardiovascular	108	(2.7)	89	(2.2)	74	(1.8)	87	(2.1)	82	(2.0)	65	(1.6)	82	(1.9)	97	(2.2)	85	(1.9)	78	(1.6)	78	(1.6)	925	(2.1)
Genitourinary	80	(2.0)	54	(1.3)	36	(0.9)	41	(1.0)	54	(1.3)	39	(0.9)	42	(1.0)	32	(0.7)	48	(1.0)	55	(1.2)	49	(1.0)	530	(1.2)
Dental	1	(0.0)	2	(0.0)	3	(0.1)	2	(0.0)	3	(0.1)	3	(0.1)	0	(0.0)	3	(0.1)	1	(0.0)	2	(0.0)	3	(0.1)	23	(0.1)
Unknown	39	(1.0)	36	(0.9)	31	(0.8)	29	(0.7)	23	(0.5)	73	(1.8)	102	(2.4)	120	(2.7)	123	(2.7)	39	(0.8)	44	(0.9)	659	(1.5)
Total Males	5785	(144.1)	4928	(122.8)	4162	(102.3)	4470	(107.5)	5730	(136.8)	6061	(145.5)	5608	(132.3)	6246	(141.8)	7032	(153.3)	7374	(155.6)	6715	(138.5)	64111	(147.7)
Total Army Person Years - Males	401347		401344		406942		415868		418777		416614		423742		440325		458685		473841		484788		4340926	

[a]Based on first record in PDCAPS. Medical condition categories based on Veterans Adminstration Schedule for Rating Disabilities (VASRD) code (2-digit Level)

[b]Rate per 10,000 Soldiers

Table 2c. Incidence Rates of Disability Discharges by Major Medical Category, Regular Army, 2000-2010[a,b] -- Females only

	2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		Total	
	n	(Rate[b])	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)
Musculoskeletal	1153	(161.3)	1088	(149.1)	960	(130.1)	1089	(146.2)	1258	(173.0)	1271	(182.5)	955	(137.9)	977	(139.1)	958	(133.4)	826	(112.1)	751	(99.6)	11286	(155.9)
Mental Disorder	172	(24.1)	116	(15.9)	77	(10.4)	77	(10.3)	93	(12.8)	86	(12.3)	81	(11.7)	128	(18.2)	178	(24.8)	251	(34.1)	346	(45.9)	1605	(22.2)
Systemic/Respiratory	192	(26.9)	158	(21.6)	122	(16.5)	163	(21.9)	145	(19.9)	117	(16.8)	86	(12.4)	56	(8.0)	76	(10.6)	47	(6.4)	59	(7.8)	1221	(16.9)
Neurological	159	(22.2)	111	(15.2)	84	(11.4)	86	(11.5)	123	(16.9)	93	(13.4)	104	(15.0)	92	(13.1)	103	(14.3)	113	(15.3)	109	(14.5)	1177	(16.3)
Genitourinary	38	(5.3)	23	(3.2)	36	(4.9)	31	(4.2)	32	(4.4)	35	(5.0)	28	(4.0)	23	(3.3)	34	(4.7)	27	(3.7)	16	(2.1)	323	(4.5)
Blood/Skin/Endocrine	42	(5.9)	22	(3.0)	18	(2.4)	33	(4.4)	35	(4.8)	33	(4.7)	31	(4.5)	20	(2.8)	26	(3.6)	21	(2.9)	24	(3.2)	305	(4.2)
Digestive	53	(7.4)	28	(3.8)	19	(2.6)	22	(3.0)	24	(3.3)	18	(2.6)	19	(2.7)	17	(2.4)	23	(3.2)	23	(3.1)	12	(1.6)	258	(3.6)
Cardiovascular	40	(5.6)	16	(2.2)	22	(3.0)	19	(2.6)	22	(3.0)	17	(2.4)	9	(1.3)	9	(1.3)	13	(1.8)	18	(2.4)	18	(2.4)	203	(2.8)
Visual/Auditory	9	(1.3)	8	(1.1)	7	(0.9)	6	(0.8)	11	(1.5)	4	(0.6)	10	(1.4)	6	(0.9)	6	(0.8)	7	(1.0)	4	(0.5)	78	(1.1)
Dental	2	(0.3)	0	(0.0)	1	(0.1)	0	(0.0)	1	(0.1)	0	(0.0)	3	(0.4)	0	(0.0)	1	(0.1)	0	(0.0)	0	(0.0)	8	(0.1)
Unknown	4	(0.6)	10	(1.4)	12	(1.6)	10	(1.3)	7	(1.0)	9	(1.3)	12	(1.7)	7	(1.0)	27	(3.8)	9	(1.2)	5	(0.7)	112	(1.5)
Total Females	1864	(260.8)	1580	(216.5)	1358	(184.0)	1536	(206.2)	1751	(240.8)	1683	(241.7)	1338	(193.2)	1335	(190.0)	1445	(201.2)	1342	(182.2)	1344	(178.2)	16576	(228.9)
Total Army Person Years - Females	71465		72985		73803		74503		72705		69641		69248		70262		71836		73669		75400		724052	

[a]Based on first record in PDCAPS. Medical condition categories based on Veterans Adminstration Schedule for Rating Disabilities (VASRD) code (2-digit Level)

[b]Rate per 10,000 Soldiers

Source: Physical Disability Computer Assisted Processing System (PDCAPS), 2010. Prepared by U.S. Army Institute of Public Health, Injury Prevention Program.

Table 3a. Incidence of Top 10 Disability Discharges by Specific Medical Condition, Regular Army, 2000-2010[a]

	2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
BONE CONDITION	931	(12.2)	1468	(22.6)	1752	(31.7)	1793	(29.8)	1984	(26.5)	1989	(25.7)	1704	(24.5)	1748	(23.0)	1286	(15.2)	988	(11.3)	548	(6.8)	16191	(20.1)
CONDITION OF THE SKELETAL SYSTEM	2271	(29.7)	1544	(23.7)	1047	(19.0)	878	(14.6)	821	(11.0)	927	(12.0)	820	(11.8)	878	(11.6)	968	(11.4)	721	(8.3)	391	(4.8)	11266	(14.0)
POST-TRAUMATIC STRESS DISORDER	59	(0.8)	42	(0.6)	21	(0.4)	44	(0.7)	201	(2.7)	262	(3.4)	343	(4.9)	549	(7.2)	1121	(13.2)	1951	(22.4)	1795	(22.3)	6388	(7.9)
ASTHMA	543	(7.1)	457	(7.0)	369	(6.7)	398	(6.6)	448	(6.0)	354	(4.6)	249	(3.6)	212	(2.8)	201	(2.4)	171	(2.0)	160	(2.0)	3562	(4.4)
LUMBOSACRAL OR CERVICAL STRAIN	0	(0.0)	0	(0.0)	0	(0.0)	113	(1.9)	511	(6.8)	553	(7.1)	488	(7.0)	538	(7.1)	365	(4.3)	336	(3.8)	263	(3.3)	3167	(3.9)
INTERVETEBRAL DISC SYNDROME	0	(0.0)	0	(0.0)	0	(0.0)	80	(1.3)	266	(3.6)	346	(4.5)	230	(3.3)	226	(3.0)	348	(4.1)	330	(3.8)	356	(4.4)	2182	(2.7)
MAJOR DEPRESSIVE DISORDER	166	(2.2)	108	(1.7)	70	(1.3)	102	(1.7)	102	(1.4)	109	(1.4)	76	(1.1)	132	(1.7)	190	(2.2)	227	(2.6)	363	(4.5)	1645	(2.0)
DEGENERATIVE ARTHRITIS OF THE SPINE	0	(0.0)	0	(0.0)	0	(0.0)	3	(0.0)	37	(0.5)	33	(0.4)	32	(0.5)	41	(0.5)	306	(3.6)	378	(4.3)	599	(7.4)	1429	(1.8)
BIPOLAR DISORDER	158	(2.1)	104	(1.6)	64	(1.2)	85	(1.4)	87	(1.2)	87	(1.1)	83	(1.2)	139	(1.8)	111	(1.3)	139	(1.6)	171	(2.1)	1228	(1.5)
TRAUMATIC BRAIN DISEASE	75	(1.0)	56	(0.9)	44	(0.8)	86	(1.4)	85	(1.1)	105	(1.4)	87	(1.3)	110	(1.5)	187	(2.2)	215	(2.5)	168	(2.1)	1218	(1.5)
Total	7650		6508		5520		6007		7486		7747		6950		7584		8478		8728		8065		80723	

[a]Based on first record in PDCAPS. Categories based on 4-Digit Veterans Adminstration Schedule for Rating Disabilities (VASRD) code

Table 3b. Incidence of Top 10 Disability Discharges by Specific Medical Condition, Regular Army, 2000-2010[a] -- Males only

	2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
BONE CONDITION	648	(8.5)	1053	(16.2)	1268	(23.0)	1291	(21.5)	1472	(19.7)	1442	(18.6)	1304	(18.8)	1325	(17.5)	1023	(12.1)	779	(8.9)	426	(5.3)	12031	(14.9)
CONDITION OF THE SKELETAL SYSTEM	1734	(22.7)	1199	(18.4)	831	(15.1)	629	(10.5)	599	(8.0)	690	(8.9)	636	(9.2)	707	(9.3)	723	(8.5)	510	(5.8)	281	(3.5)	8539	(10.6)
POST-TRAUMATIC STRESS DISORDER	38	(0.5)	25	(0.4)	14	(0.3)	37	(0.6)	182	(2.4)	248	(3.2)	327	(4.7)	525	(6.9)	1059	(12.5)	1819	(20.8)	1635	(20.3)	5909	(7.3)
LUMBOSACRAL OR CERVICAL STRAIN	0	(0.0)	0	(0.0)	0	(0.0)	86	(1.4)	371	(5.0)	443	(5.7)	405	(5.8)	436	(5.7)	295	(3.5)	283	(3.2)	208	(2.6)	2527	(3.1)
INTERVETEBRAL DISC SYNDROME	0	(0.0)	0	(0.0)	0	(0.0)	57	(0.9)	213	(2.8)	297	(3.8)	199	(2.9)	200	(2.6)	305	(3.6)	295	(3.4)	318	(3.9)	1884	(2.3)
MAJOR DEPRESSIVE DISORDER	107	(1.4)	69	(1.1)	48	(0.9)	81	(1.3)	80	(1.1)	83	(1.1)	58	(0.8)	98	(1.3)	149	(1.8)	178	(2.0)	285	(3.5)	1236	(1.5)
DEGENERATIVE ARTHRITIS OF THE SPINE	0	(0.0)	0	(0.0)	0	(0.0)	2	(0.0)	29	(0.4)	28	(0.4)	26	(0.4)	35	(0.5)	261	(3.1)	319	(3.7)	493	(6.1)	1193	(1.5)
TRAUMATIC BRAIN DISEASE	70	(0.9)	52	(0.8)	40	(0.7)	82	(1.4)	80	(1.1)	96	(1.2)	81	(1.2)	106	(1.4)	183	(2.2)	203	(2.3)	158	(2.0)	1151	(1.4)
BIPOLAR DISORDER	124	(1.6)	84	(1.3)	46	(0.8)	66	(1.1)	58	(0.8)	62	(0.8)	69	(1.0)	112	(1.5)	90	(1.1)	109	(1.2)	133	(1.6)	953	(1.2)
LIMITED MOTION OF ANKLE	30	(0.4)	43	(0.7)	34	(0.6)	31	(0.5)	57	(0.8)	63	(0.8)	82	(1.2)	70	(0.9)	99	(1.2)	76	(0.9)	134	(1.7)	719	(0.9)
Total Males	5785		4928		4162		4470		5730		6061		5608		6246		7032		7374		6715		64111	

[a]Based on first record in PDCAPS. Categories based on 4-Digit Veterans Adminstration Schedule for Rating Disabilities (VASRD) code

Table 3c. Incidence of Top 10 Disability Discharges by Specific Medical Condition, Regular Army, 2000-2010[a] -- Females only

	2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
BONE CONDITION	283	(15.2)	415	(26.3)	484	(35.6)	502	(32.7)	511	(29.2)	547	(32.5)	398	(29.7)	423	(31.7)	262	(18.1)	207	(15.4)	121	(9.0)	4153	(25.1)
CONDITION OF THE SKELETAL SYSTEM	537	(28.8)	345	(21.8)	216	(15.9)	249	(16.2)	220	(12.6)	236	(14.0)	184	(13.8)	171	(12.8)	245	(17.0)	211	(15.7)	110	(8.2)	2724	(16.4)
ASTHMA	137	(7.3)	123	(7.8)	102	(7.5)	136	(8.9)	115	(6.6)	88	(5.2)	66	(4.9)	45	(3.4)	44	(3.0)	31	(2.3)	40	(3.0)	927	(5.6)
LUMBOSACRAL OR CERVICAL STRAIN	0	(0.0)	0	(0.0)	0	(0.0)	27	(1.8)	140	(8.0)	109	(6.5)	83	(6.2)	102	(7.6)	70	(4.8)	53	(3.9)	55	(4.1)	639	(3.9)
POST-TRAUMATIC STRESS DISORDER	21	(1.1)	17	(1.1)	7	(0.5)	7	(0.5)	19	(1.1)	14	(0.8)	16	(1.2)	24	(1.8)	62	(4.3)	128	(9.5)	159	(11.8)	474	(2.9)
MAJOR DEPRESSIVE DISORDER	59	(3.2)	39	(2.5)	22	(1.6)	21	(1.4)	22	(1.3)	26	(1.5)	18	(1.3)	34	(2.5)	41	(2.8)	49	(3.7)	77	(5.7)	408	(2.5)
INTERVETEBRAL DISC SYNDROME	0	(0.0)	0	(0.0)	0	(0.0)	23	(1.5)	53	(3.0)	49	(2.9)	31	(2.3)	26	(1.9)	43	(3.0)	35	(2.6)	38	(2.8)	298	(1.8)
BIPOLAR DISORDER	34	(1.8)	20	(1.3)	18	(1.3)	19	(1.2)	29	(1.7)	25	(1.5)	14	(1.0)	27	(2.0)	21	(1.5)	29	(2.2)	38	(2.8)	274	(1.7)
DEGENERATIVE ARTHRITIS OF THE SPINE	0	(0.0)	0	(0.0)	0	(0.0)	1	(0.1)	8	(0.5)	5	(0.3)	6	(0.4)	6	(0.4)	45	(3.1)	58	(4.3)	104	(7.7)	233	(1.4)
RESIDUALS OF FOOT INJURY	5	(0.3)	1	(0.1)	1	(0.1)	2	(0.1)	3	(0.2)	1	(0.1)	1	(0.1)	4	(0.3)	28	(1.9)	34	(2.5)	33	(2.5)	113	(0.7)
Total Females	1864		1580		1358		1536		1751		1683		1338		1335		1445		1342		1344		16576	

[a]Based on first record in PDCAPS. Categories based on 4-Digit Veterans Adminstration Schedule for Rating Disabilities (VASRD) code

Source: Physical Disability Computer Assisted Processing System (PDCAPS), 2010. Prepared by U.S. Army Institute of Public Health, Injury Prevention Program.

Table 4a. Incidence Rates of Top 10 Disability Discharges by Specific Medical Condition, Regular Army, 2000-2010[a,b]

	2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		Total	
	n	(Rate[b])	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)
BONE CONDITION	931	(23.2)	1468	(36.6)	1752	(43.1)	1793	(43.1)	1984	(47.4)	1989	(47.7)	1704	(40.2)	1748	(39.7)	1286	(28.0)	988	(20.9)	548	(11.3)	16191	(37.3)
CONDITION OF THE SKELETAL SYSTEM	2271	(56.6)	1544	(38.5)	1047	(25.7)	878	(21.1)	821	(19.6)	927	(22.3)	820	(19.4)	878	(19.9)	968	(21.1)	721	(15.2)	391	(8.1)	11266	(26.0)
POST-TRAUMATIC STRESS DISORDER	59	(1.5)	42	(1.0)	21	(0.5)	44	(1.1)	201	(4.8)	262	(6.3)	343	(8.1)	549	(12.5)	1121	(24.4)	1951	(41.2)	1795	(37.0)	6388	(14.7)
ASTHMA	543	(13.5)	457	(11.4)	369	(9.1)	398	(9.6)	448	(10.7)	354	(8.5)	249	(5.9)	212	(4.8)	201	(4.4)	171	(3.6)	160	(3.3)	3562	(8.2)
LUMBOSACRAL OR CERVICAL STRAIN	0	(0.0)	0	(0.0)	0	(0.0)	113	(2.7)	511	(12.2)	553	(13.3)	488	(11.5)	538	(12.2)	365	(8.0)	336	(7.1)	263	(5.4)	3167	(7.3)
INTERVETEBRAL DISC SYNDROME	0	(0.0)	0	(0.0)	0	(0.0)	80	(1.9)	266	(6.4)	346	(8.3)	230	(5.4)	226	(5.1)	348	(7.6)	330	(7.0)	356	(7.3)	2182	(5.0)
MAJOR DEPRESSIVE DISORDER	166	(4.1)	108	(2.7)	70	(1.7)	102	(2.5)	102	(2.4)	109	(2.6)	76	(1.8)	132	(3.0)	190	(4.1)	227	(4.8)	363	(7.5)	1645	(3.8)
DEGENERATIVE ARTHRITIS OF THE SPINE	0	(0.0)	0	(0.0)	0	(0.0)	3	(0.1)	37	(0.9)	33	(0.8)	32	(0.8)	41	(0.9)	306	(6.7)	378	(8.0)	599	(12.4)	1429	(3.3)
BIPOLAR DISORDER	158	(3.9)	104	(2.6)	64	(1.6)	85	(2.0)	87	(2.1)	87	(2.1)	83	(2.0)	139	(3.2)	111	(2.4)	139	(2.9)	171	(3.5)	1228	(2.8)
TRAUMATIC BRAIN DISEASE	75	(1.9)	56	(1.4)	44	(1.1)	86	(2.1)	85	(2.0)	105	(2.5)	87	(2.1)	110	(2.5)	187	(4.1)	215	(4.5)	168	(3.5)	1218	(2.8)
TOTAL DISCHARGES	7650	(161.8)	6508	(137.2)	5520	(114.8)	6007	(122.5)	7486	(152.3)	7747	(159.3)	6950	(141.0)	7584	(148.5)	8478	(159.8)	8728	(159.4)	8065	(144.0)	80723	(145.8)
TOTAL ARMY PERSON YEARS	472904		474363		480853		490406		491482		486255		492990		510587		530522		547511		560187		5538060	

[a]Based on first record in PDCAPS. Medical condition categories based on 4-Digit Veterans Adminstration Schedule for Rating Disabilities (VASRD) code

[b]Rate per 10,000 Soldiers

Table 4b. Incidence Rates of Top 10 Disability Discharges by Specific Medical Condition, Regular Army, 2000-2010[a,b] -- Males only

	2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		Total	
	n	(Rate[b])	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)
BONE CONDITION	648	(16.1)	1053	(26.2)	1268	(31.2)	1291	(31.0)	1472	(35.1)	1442	(34.6)	1304	(30.8)	1325	(30.1)	1023	(22.3)	779	(16.4)	426	(8.8)	12031	(27.7)
CONDITION OF THE SKELETAL SYSTEM	1734	(43.2)	1199	(29.9)	831	(20.4)	629	(15.1)	599	(14.3)	690	(16.6)	636	(15.0)	707	(16.1)	723	(15.8)	510	(10.8)	281	(5.8)	8539	(19.7)
POST-TRAUMATIC STRESS DISORDER	38	(0.9)	25	(0.6)	14	(0.3)	37	(0.9)	182	(4.3)	248	(6.0)	327	(7.7)	525	(11.9)	1059	(23.1)	1819	(38.4)	1635	(33.7)	5909	(13.6)
LUMBOSACRAL OR CERVICAL STRAIN	0	(0.0)	0	(0.0)	0	(0.0)	86	(2.1)	371	(8.9)	443	(10.6)	405	(9.6)	436	(9.9)	295	(6.4)	283	(6.0)	208	(4.3)	2527	(5.8)
INTERVETEBRAL DISC SYNDROME	0	(0.0)	0	(0.0)	0	(0.0)	57	(1.4)	213	(5.1)	297	(7.1)	199	(4.7)	200	(4.5)	305	(6.6)	295	(6.2)	318	(6.6)	1884	(4.3)
MAJOR DEPRESSIVE DISORDER	107	(2.7)	69	(1.7)	48	(1.2)	81	(1.9)	80	(1.9)	83	(2.0)	58	(1.4)	98	(2.2)	149	(3.2)	178	(3.8)	285	(5.9)	1236	(2.8)
DEGENERATIVE ARTHRITIS OF THE SPINE	0	(0.0)	0	(0.0)	0	(0.0)	2	(0.0)	29	(0.7)	28	(0.7)	26	(0.6)	35	(0.8)	261	(5.7)	319	(6.7)	493	(10.2)	1193	(2.7)
TRAUMATIC BRAIN DISEASE	70	(1.7)	52	(1.3)	40	(1.0)	82	(2.0)	80	(1.9)	96	(2.3)	81	(1.9)	106	(2.4)	183	(4.0)	203	(4.3)	158	(3.3)	1151	(2.7)
BIPOLAR DISORDER	124	(3.1)	84	(2.1)	46	(1.1)	66	(1.6)	58	(1.4)	62	(1.5)	69	(1.6)	112	(2.5)	90	(2.0)	109	(2.3)	133	(2.7)	953	(2.2)
LIMITED MOTION OF ANKLE	30	(0.7)	43	(1.1)	34	(0.8)	31	(0.7)	57	(1.4)	63	(1.5)	82	(1.9)	70	(1.6)	99	(2.2)	76	(1.6)	134	(2.8)	719	(1.7)
TOTAL MALE DISCHARGES	5785	(144.1)	4928	(122.8)	4162	(102.3)	4470	(107.5)	5730	(136.8)	6061	(145.5)	5608	(132.3)	6246	(141.8)	7032	(153.3)	7374	(155.6)	6715	(138.5)	64111	(147.7)
TOTAL ARMY PERSON YEARS - MALES	401347		401344		406942		415868		418777		416614		423742		440325		458685		473841		484788		4340926	

[a]Based on first record in PDCAPS. Medical condition categories based on 4-Digit Veterans Adminstration Schedule for Rating Disabilities (VASRD) code

[b]Rate per 10,000 Soldiers

Table 4c. Incidence Rates of Top 10 Disability Discharges by Specific Medical Condition, Regular Army, 2000-2010[a,b] -- Females only

	2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		Total	
	n	(Rate[b])	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)	n	(Rate)
BONE CONDITION	283	(39.6)	415	(56.9)	484	(65.6)	502	(67.4)	511	(70.3)	547	(78.5)	398	(57.5)	423	(60.2)	262	(36.5)	207	(28.1)	121	(16.0)	4153	(57.4)
CONDITION OF THE SKELETAL SYSTEM	537	(75.1)	345	(47.3)	216	(29.3)	249	(33.4)	220	(30.3)	236	(33.9)	184	(26.6)	171	(24.3)	245	(34.1)	211	(28.6)	110	(14.6)	2724	(37.6)
ASTHMA	137	(19.2)	123	(16.9)	102	(13.8)	136	(18.3)	115	(15.8)	88	(12.6)	66	(9.5)	45	(6.4)	44	(6.1)	31	(4.2)	40	(5.3)	927	(12.8)
LUMBOSACRAL OR CERVICAL STRAIN	0	(0.0)	0	(0.0)	0	(0.0)	27	(3.6)	140	(19.3)	109	(15.7)	83	(12.0)	102	(14.5)	70	(9.7)	53	(7.2)	55	(7.3)	639	(8.8)
POST-TRAUMATIC STRESS DISORDER	21	(2.9)	17	(2.3)	7	(0.9)	7	(0.9)	19	(2.6)	14	(2.0)	16	(2.3)	24	(3.4)	62	(8.6)	128	(17.4)	159	(21.1)	474	(6.5)
MAJOR DEPRESSIVE DISORDER	59	(8.3)	39	(5.3)	22	(3.0)	21	(2.8)	22	(3.0)	26	(3.7)	18	(2.6)	34	(4.8)	41	(5.7)	49	(6.7)	77	(10.2)	408	(5.6)
INTERVETEBRAL DISC SYNDROME	0	(0.0)	0	(0.0)	0	(0.0)	23	(3.1)	53	(7.3)	49	(7.0)	31	(4.5)	26	(3.7)	43	(6.0)	35	(4.8)	38	(5.0)	298	(4.1)
BIPOLAR DISORDER	34	(4.8)	20	(2.7)	18	(2.4)	19	(2.6)	29	(4.0)	25	(3.6)	14	(2.0)	27	(3.8)	21	(2.9)	29	(3.9)	38	(5.0)	274	(3.8)
DEGENERATIVE ARTHRITIS OF THE SPINE	0	(0.0)	0	(0.0)	0	(0.0)	1	(0.1)	8	(1.1)	5	(0.7)	6	(0.9)	6	(0.9)	45	(6.3)	58	(7.9)	104	(13.8)	233	(3.2)
RESIDUALS OF FOOT INJURY	5	(0.7)	1	(0.1)	1	(0.1)	2	(0.3)	3	(0.4)	1	(0.1)	1	(0.1)	4	(0.6)	28	(3.9)	34	(4.6)	33	(4.4)	113	(1.6)
TOTAL FEMALE DISCHARGES	1864	(260.8)	1580	(216.5)	1358	(184.0)	1536	(206.2)	1751	(240.8)	1683	(241.7)	1338	(193.2)	1335	(190.0)	1445	(201.2)	1342	(182.2)	1344	(178.2)	16576	(228.9)
TOTAL ARMY PERSON YEARS -FEMALES	71465		72985		73803		74503		72705		69641		69248		70262		71836		73669		75400		724052	

[a]Based on first record in PDCAPS. Medical condition categories based on 4-Digit Veterans Adminstration Schedule for Rating Disabilities (VASRD) code

[b]Rate per 10,000 Soldiers

Source: Physical Disability Computer Assisted Processing System (PDCAPS), 2010. Prepared by U.S. Army Institute of Public Health, Injury Prevention Program.

Table 5a. Incidence of Disability Discharges by Major Medical Category, National Guard and Reservists, 2000-2010[a,b]

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Musculoskeletal	434 (59.9)	443 (57.5)	524 (55.8)	1384 (54.3)	2321 (60.0)	1857 (59.3)	1568 (63.6)	1191 (57.3)	1313 (52.5)	1278 (42.3)	979 (36.6)	13292 (53.8)
Mental Disorder	74 (10.2)	101 (13.1)	95 (10.1)	210 (8.2)	289 (7.5)	217 (6.9)	205 (8.3)	272 (13.1)	553 (22.1)	1027 (34.0)	1036 (38.8)	4079 (16.5)
Neurological	77 (10.6)	72 (9.4)	93 (9.9)	163 (6.4)	258 (6.7)	235 (7.5)	156 (6.3)	199 (9.6)	261 (10.4)	313 (10.4)	236 (8.8)	2063 (8.3)
Systemic/Respiratory	40 (5.5)	34 (4.4)	48 (5.1)	179 (7.0)	236 (6.1)	148 (4.7)	100 (4.1)	73 (3.5)	68 (2.7)	110 (3.6)	73 (2.7)	1109 (4.5)
Blood/Skin/Endocrine	26 (3.6)	25 (3.2)	37 (3.9)	176 (6.9)	205 (5.3)	108 (3.4)	62 (2.5)	44 (2.1)	58 (2.3)	39 (1.3)	46 (1.7)	826 (3.3)
Cardiovascular	30 (4.1)	26 (3.4)	37 (3.9)	100 (3.9)	125 (3.2)	85 (2.7)	70 (2.8)	59 (2.8)	54 (2.2)	37 (1.2)	58 (2.2)	681 (2.8)
Digestive	16 (2.2)	20 (2.6)	17 (1.8)	53 (2.1)	64 (1.7)	58 (1.9)	34 (1.4)	22 (1.1)	29 (1.2)	39 (1.3)	43 (1.6)	395 (1.6)
Genitourinary	11 (1.5)	7 (0.9)	16 (1.7)	35 (1.4)	43 (1.1)	29 (0.9)	17 (0.7)	27 (1.3)	27 (1.1)	30 (1.0)	23 (0.9)	265 (1.1)
Visual/Auditory	2 (0.3)	0 (0.0)	6 (0.6)	22 (0.9)	29 (0.7)	24 (0.8)	12 (0.5)	10 (0.5)	3 (0.1)	18 (0.6)	7 (0.3)	133 (0.5)
Dental	0 (0.0)	1 (0.1)	1 (0.1)	1 (0.0)	0 (0.0)	0 (0.0)	1 (0.0)	1 (0.0)	2 (0.1)	2 (0.1)	3 (0.1)	14 (0.1)
Unknown	15 (2.1)	39 (5.1)	66 (7.0)	231 (9.1)	300 (7.8)	373 (11.9)	245 (9.9)	186 (8.9)	133 (5.3)	130 (4.3)	175 (6.5)	1892 (7.7)
Total National Guard and Reservists	724	770	939	2551	3869	3132	2467	2080	2500	3021	2673	24726

[a]Medical condition categories are based on Veterans Adminstration Schedule for Rating Disabilities (VASRD) code groups (2-Digit Level)

[b]based on first record in PDCAPS

Table 5b. Incidence of Disability Discharges by Major Medical Category, National Guard and Reservists, 2000-2010[a,b] – Males only

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Musculoskeletal	306 (59.2)	297 (54.0)	377 (55.9)	1058 (53.2)	1867 (60.1)	1490 (58.9)	1274 (63.7)	945 (57.1)	980 (50.2)	930 (38.9)	737 (34.2)	10261 (52.6)
Mental Disorder	54 (10.4)	72 (13.1)	49 (7.3)	158 (8.0)	217 (7.0)	173 (6.8)	164 (8.2)	217 (13.1)	457 (23.4)	865 (36.2)	897 (41.6)	3323 (17.0)
Neurological	58 (11.2)	52 (9.5)	73 (10.8)	132 (6.6)	202 (6.5)	198 (7.8)	134 (6.7)	163 (9.8)	224 (11.5)	256 (10.7)	183 (8.5)	1675 (8.6)
Systemic/Respiratory	29 (5.6)	29 (5.3)	36 (5.3)	136 (6.8)	192 (6.2)	112 (4.4)	80 (4.0)	51 (3.1)	46 (2.4)	94 (3.9)	60 (2.8)	865 (4.4)
Blood/Skin/Endocrine	19 (3.7)	17 (3.1)	33 (4.9)	151 (7.6)	174 (5.6)	98 (3.9)	57 (2.9)	40 (2.4)	50 (2.6)	33 (1.4)	37 (1.7)	709 (3.6)
Cardiovascular	24 (4.6)	25 (4.5)	30 (4.5)	91 (4.6)	106 (3.4)	80 (3.2)	64 (3.2)	53 (3.2)	51 (2.6)	37 (1.5)	51 (2.4)	612 (3.1)
Digestive	10 (1.9)	19 (3.5)	15 (2.2)	49 (2.5)	50 (1.6)	50 (2.0)	26 (1.3)	19 (1.1)	23 (1.2)	34 (1.4)	36 (1.7)	331 (1.7)
Genitourinary	8 (1.5)	4 (0.7)	14 (2.1)	23 (1.2)	36 (1.2)	24 (0.9)	9 (0.5)	21 (1.3)	22 (1.1)	23 (1.0)	16 (0.7)	200 (1.0)
Visual/Auditory	1 (0.2)	0 (0.0)	4 (0.6)	21 (1.1)	28 (0.9)	22 (0.9)	10 (0.5)	9 (0.5)	3 (0.2)	15 (0.6)	6 (0.3)	119 (0.6)
Dental	0 (0.0)	2 (0.4)	0 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)	1 (0.1)	1 (0.1)	1 (0.1)	1 (0.0)	2 (0.1)	9 (0.0)
Unknown	8 (1.5)	33 (6.0)	43 (6.4)	167 (8.4)	232 (7.5)	284 (11.2)	180 (9.0)	137 (8.3)	94 (4.8)	102 (4.3)	131 (6.1)	1411 (7.2)
Total National Guard and Reservists - Males	517	550	674	1987	3104	2531	1999	1656	1951	2390	2156	19515

[a]Medical condition categories are based on Veterans Adminstration Schedule for Rating Disabilities (VASRD) code groups (2-Digit Level)

[b]based on first record in PDCAPS

Table 5c. Incidence of Disability Discharges by Major Medical Category, National Guard and Reservists, 2000-2010[a,b] -- Females only

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Musculoskeletal	127 (61.7)	146 (66.4)	147 (55.5)	323 (57.6)	454 (122.4)	365 (60.9)	293 (63.0)	243 (57.9)	332 (60.6)	347 (55.2)	240 (47.0)	3017 (58.2)
Mental Disorder	20 (9.7)	29 (13.2)	46 (17.4)	52 (9.3)	72 (19.4)	44 (7.3)	40 (8.6)	54 (12.9)	96 (17.5)	162 (25.8)	138 (27.0)	753 (14.5)
Neurological	19 (9.2)	20 (9.1)	20 (7.5)	31 (5.5)	56 (15.1)	37 (6.2)	22 (4.7)	36 (8.6)	37 (6.8)	57 (9.1)	52 (10.2)	387 (7.5)
Systemic/Respiratory	11 (5.3)	5 (2.3)	12 (4.5)	43 (7.7)	43 (11.6)	36 (6.0)	20 (4.3)	22 (5.2)	22 (4.0)	16 (2.5)	13 (2.5)	243 (4.7)
Blood/Skin/Endocrine	7 (3.4)	8 (3.6)	4 (1.5)	25 (4.5)	31 (8.4)	10 (1.7)	5 (1.1)	4 (1.0)	8 (1.5)	5 (0.8)	7 (1.4)	114 (2.2)
Cardiovascular	6 (2.9)	1 (0.5)	7 (2.6)	9 (1.6)	19 (5.1)	5 (0.8)	6 (1.3)	6 (1.4)	3 (0.5)	0 (0.0)	7 (1.4)	69 (1.3)
Genitourinary	3 (1.5)	3 (1.4)	2 (0.8)	12 (2.1)	7 (1.9)	5 (0.8)	8 (1.7)	6 (1.4)	5 (0.9)	7 (1.1)	7 (1.4)	65 (1.3)
Digestive	6 (2.9)	1 (0.5)	2 (0.8)	4 (0.7)	14 (3.8)	8 (1.3)	8 (1.7)	3 (0.7)	6 (1.1)	5 (0.8)	7 (1.4)	64 (1.2)
Visual/Auditory	1 (0.5)	0 (0.0)	2 (0.8)	1 (0.2)	1 (0.3)	2 (0.3)	2 (0.4)	1 (0.2)	0 (0.0)	3 (0.5)	1 (0.2)	14 (0.3)
Dental	0 (0.0)	1 (0.5)	1 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)	1 (0.2)	1 (0.2)	5 (0.1)
Unknown	6 (2.9)	6 (2.7)	22 (8.3)	61 (10.9)	67 (18.1)	87 (14.5)	61 (13.1)	45 (10.7)	38 (6.9)	26 (4.1)	38 (7.4)	457 (8.8)
Total National Guard and Reservists - Females	206	220	265	561	764 (370.9)	599	465	420	548	629	511	5188

[a]Medical condition categories are based on Veterans Adminstration Schedule for Rating Disabilities (VASRD) code groups (2-Digit Level)

[b]based on first record in PDCAPS

Source: Physical Disability Computer Assisted Processing System (PDCAPS), 2010. Prepared by U.S. Army Institute of Public Health, Injury Prevention Program.

Table 6a. Incidence of Top 10 Disability Discharges by Specific Medical Condition, National Guard & Reservists, 2000-2010[a]

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %
BONE CONDITION	58 (8.0)	145 (18.8)	222 (23.6)	494 (19.4)	756 (19.5)	540 (17.2)	436 (17.7)	310 (14.9)	242 (9.7)	216 (7.1)	129 (4.8)	3548 (14.3)
CONDITION OF THE SKELETAL SYSTEM	200 (27.6)	142 (18.4)	135 (14.4)	290 (11.4)	438 (11.3)	286 (9.1)	316 (12.8)	216 (10.4)	282 (11.3)	204 (6.8)	109 (4.1)	2618 (10.6)
POST-TRAUMATIC STRESS DISORDER	8 (1.1)	12 (1.6)	12 (1.3)	32 (1.3)	66 (1.7)	70 (2.2)	93 (3.8)	129 (6.2)	326 (13.0)	679 (22.5)	706 (26.4)	2133 (8.6)
LUMBOSACRAL OR CERVICAL STRAIN	0 (0.0)	0 (0.0)	0 (0.0)	76 (3.0)	261 (6.7)	222 (7.1)	201 (8.1)	148 (7.1)	83 (3.3)	76 (2.5)	47 (1.8)	1114 (4.5)
INTERVETEBRAL DISC SYNDROME	0 (0.0)	0 (0.0)	0 (0.0)	76 (3.0)	177 (4.6)	168 (5.4)	101 (4.1)	69 (3.3)	77 (3.1)	122 (4.0)	106 (4.0)	896 (3.6)
SPINAL FUSION	0 (0.0)	0 (0.0)	0 (0.0)	24 (0.9)	103 (2.7)	125 (4.0)	112 (4.5)	100 (4.8)	123 (4.9)	118 (3.9)	61 (2.3)	766 (3.1)
MAJOR DEPRESSIVE DISORDER	29 (4.0)	35 (4.5)	26 (2.8)	65 (2.5)	75 (1.9)	56 (1.8)	48 (1.9)	57 (2.7)	88 (3.5)	144 (4.8)	137 (5.1)	760 (3.1)
DEGENERATIVE ARTHRITIS OF THE SPINE	0 (0.0)	0 (0.0)	0 (0.0)	5 (0.2)	28 (0.7)	21 (0.7)	29 (1.2)	22 (1.1)	107 (4.3)	124 (4.1)	155 (5.8)	491 (2.0)
TRAUMATIC BRAIN DISEASE	9 (1.2)	6 (0.8)	7 (0.7)	20 (0.8)	38 (1.0)	39 (1.2)	30 (1.2)	33 (1.6)	72 (2.9)	90 (3.0)	59 (2.2)	403 (1.6)
ANXIETY DISORDER	1 (0.1)	0 (0.0)	2 (0.2)	4 (0.2)	10 (0.3)	9 (0.3)	8 (0.3)	19 (0.9)	30 (1.2)	51 (1.7)	68 (2.5)	202 (0.8)
TOTAL	724	770	939	2551	3869	3132	2467	2080	2500	3021	2673	24726

[a]Based on first record in PDCAPS. Medical condition categories based on 4-Digit Veterans Adminstration Schedule for Rating Disabilities (VASRD) code

Table 6b. Incidence of Top 10 Disability Discharges by Specific Medical Condition, National Guard & Reservists, 2000-2010[a] -- Males only

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %
BONE CONDITION	31 (6.0)	85 (15.5)	154 (22.8)	345 (17.4)	577 (18.6)	394 (15.6)	319 (16.0)	220 (13.3)	163 (8.4)	146 (6.1)	95 (4.4)	2529 (13.0)
CONDITION OF THE SKELETAL SYSTEM	148 (28.6)	103 (18.7)	99 (14.7)	225 (11.3)	347 (11.2)	239 (9.4)	269 (13.5)	173 (10.4)	174 (8.9)	111 (4.6)	55 (2.6)	1943 (10.0)
POST-TRAUMATIC STRESS DISORDER	4 (0.8)	8 (1.5)	8 (1.2)	28 (1.4)	50 (1.6)	61 (2.4)	79 (4.0)	116 (7.0)	290 (14.9)	606 (25.4)	644 (29.9)	1894 (9.7)
LUMBOSACRAL OR CERVICAL STRAIN	0 (0.0)	0 (0.0)	0 (0.0)	66 (93.0)	209 (135.7)	184 (125.2)	164 (172.6)	128 (200.0)	71 (110.9)	56 (54.9)	39 (44.3)	917 (116.8)
INTERVETEBRAL DISC SYNDROME	0 (0.0)	0 (0.0)	0 (0.0)	71 (3.6)	154 (5.0)	147 (5.8)	95 (4.8)	64 (3.9)	64 (3.3)	102 (4.3)	88 (4.1)	785 (4.0)
SPINAL FUSION	0 (0.0)	0 (0.0)	0 (0.0)	20 (1.0)	92 (3.0)	110 (4.3)	98 (4.9)	87 (5.3)	107 (5.5)	100 (4.2)	53 (2.5)	667 (3.4)
MAJOR DEPRESSIVE DISORDER	24 (4.6)	26 (4.7)	9 (1.3)	46 (2.3)	52 (1.7)	36 (1.4)	35 (1.8)	36 (2.2)	65 (3.3)	97 (4.1)	99 (4.6)	525 (2.7)
DEGENERATIVE ARTHRITIS OF THE SPINE	0 (0.0)	0 (0.0)	0 (0.0)	4 (0.2)	26 (0.8)	18 (0.7)	26 (1.3)	20 (1.2)	99 (5.1)	97 (4.1)	133 (6.2)	423 (2.2)
TRAUMATIC BRAIN DISEASE	6 (1.2)	4 (0.7)	7 (1.0)	18 (0.9)	34 (1.1)	35 (1.4)	29 (1.5)	30 (1.8)	64 (3.3)	82 (3.4)	54 (2.5)	363 (1.9)
ANXIETY DISORDER	1 (0.2)	0 (0.0)	2 (0.3)	4 (0.2)	9 (0.3)	8 (0.3)	8 (0.4)	14 (0.8)	27 (1.4)	39 (1.6)	58 (2.7)	170 (0.9)
Total Males	517	550	674	1987	3104	2531	1999	1656	1951	2390	2156	19515

[a]Based on first record in PDCAPS. Medical condition categories based on 4-Digit Veterans Adminstration Schedule for Rating Disabilities (VASRD) code

Table 6c. Incidence of Top 10 Disability Discharges by Specific Medical Condition, National Guard & Reservists, 2000-2010[a] -- Females only

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %	n %
BONE CONDITION	27 (13.1)	60 (27.3)	68 (25.7)	148 (26.4)	179 (23.4)	146 (24.4)	117 (25.2)	89 (21.2)	79 (14.4)	70 (11.1)	34 (6.7)	1017 (19.6)
CONDITION OF THE SKELETAL SYSTEM	52 (25.2)	39 (17.7)	36 (13.6)	64 (11.4)	91 (11.9)	47 (7.8)	47 (10.1)	43 (10.2)	108 (19.7)	93 (14.8)	53 (10.4)	673 (13.0)
POST-TRAUMATIC STRESS DISORDER	4 (1.9)	4 (1.8)	4 (1.5)	4 (0.7)	16 (2.1)	9 (1.5)	14 (3.0)	12 (2.9)	36 (6.6)	73 (11.6)	62 (12.1)	238 (4.6)
MAJOR DEPRESSIVE DISORDER	5 (2.4)	9 (4.1)	17 (6.4)	19 (3.4)	23 (3.0)	20 (3.3)	13 (2.8)	21 (5.0)	23 (4.2)	47 (7.5)	38 (7.4)	235 (4.5)
FIBROMYALGIA	7 (3.4)	5 (2.3)	6 (2.3)	13 (2.3)	15 (2.0)	21 (3.5)	8 (1.7)	8 (1.9)	17 (3.1)	10 (1.6)	13 (2.5)	123 (2.4)
INTERVETEBRAL DISC SYNDROME	0 (0.0)	0 (0.0)	0 (0.0)	5 (0.9)	23 (3.0)	21 (3.5)	6 (1.3)	5 (1.2)	13 (2.4)	19 (3.0)	18 (3.5)	110 (2.1)
MIGRAINE HEADACHES	2 (1.0)	2 (0.9)	4 (1.5)	9 (1.6)	10 (1.3)	10 (1.7)	4 (0.9)	4 (1.0)	2 (0.4)	11 (1.7)	16 (3.1)	74 (1.4)
DEGENERATIVE ARTHRITIS OF THE SPINE	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.3)	3 (0.5)	3 (0.6)	2 (0.5)	8 (1.5)	27 (4.3)	22 (4.3)	67 (1.3)
RESIDUALS OF FOOT INJURY	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)	0 (0.0)	2 (0.5)	13 (2.4)	26 (4.1)	9 (1.8)	52 (1.0)
IMPAIRMENT OF FEMUR	4 (1.9)	1 (0.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.2)	2 (0.3)	9 (1.8)	17 (0.3)
Total Females	206	220	265	561	764	599	465	420	548	629	511	5188

[a]Based on first record in PDCAPS. Medical condition categories based on 4-Digit Veterans Adminstration Schedule for Rating Disabilities (VASRD) code

Source: Physical Disability Computer Assisted Processing System (PDCAPS), 2010. Prepared by U.S. Army Institute of Public Health, Injury Prevention Program.

Appendix I

Products Resulting from 4ID program evaluations (as of August 2016)

Presentations to Leadership

3/4 Tactical Athlete Program Evaluation, Preliminary Findings. Grier T and Canham-Chervak M. Briefing for COL Michael Kasales, Commander, 3rd Brigade, 4th Infantry Division, 21 February 2013

4/4 Mountain Athlete Warrior Program Evaluation, Preliminary Findings. Grier T and Canham-Chervak M. Briefing for COL John Mingus, 4th Brigade, 4th Infantry Division, 5 February 2013

2/4 Initial and Follow-up Data Comparison. Grier T and Canham-Chervak M. Briefing for COL Omar Jones, Commander, 2nd Brigade, 4th Infantry Division, 8 January 2013

Peer-reviewed Journal Manuscripts

Anderson MK, Grier T, Canham-Chervak M, Bushman T, Nindl BC, Jones BH. Effect of Mandatory Unit and Individual Physical Training on Fitness in Military Men and Women. American Journal of Health Promotion, Published online ahead of print, DOI: 10.1177/0890117116666977

Anderson MK, Grier T, Canham-Chervak M, Bushman T, Jones BH. 2015. Physical training, smoking, and injury during deployment: a comparison of men and women in the U.S. Army. *U.S. Army Medical Department Journal*: 42-48, Apr-Jun 2015

Anderson MK, Grier T, Canham-Chervak M, Bushman T, Jones BH. 2015. Occupational and other risk factors for injury among enlisted U.S. Army Soldiers. *Public Health*, 129: 531-538

Anderson MK, Grier T, Canham-Chervak M, Bushman T, Jones BH. 2014. Risk Factors associated with higher body fat in US Army women. *U.S. Army Medical Department Journal*: 75-82, Apr-Jun 2014

Bushman T, Grier T, Canham-Chervak M, Anderson MK, North W, Jones BH. 2016. Association of functional movement screening with injury risk in Army Soldiers. *American Journal of Sports Medicine*, 44:2, 297- 304

Bushman T, Grier T, Canham-Chervak M, Anderson MK, North W, Jones BH. 2015. Pain on Functional Movement Screen Tests and Injury Risk. *Journal of Strength and Conditioning Research*, 29:11S, S65-S70

Grier T, Canham-Chervak M, Anderson M, Bushman T, Jones BH. Effects of Physical Training and Fitness on Running Injuries in Physically Active Young Men. In Press: *JSCR*

Grier T, Canham-Chervak M, Bushman T, Anderson M, North W, Jones BH. 2016. Minimalist Running Shoes and Injury Risk among U.S. Army Soldiers. *American Journal of Sports Medicine*, 44(6): 1439-1446

Grier T, Canham-Chervak M, Anderson MK, Bushman T, Jones BH. 2015. The Effects of Cross-Training on Fitness and Injury in Women. *U.S. Army Medical Department Journal*: 33-41, Apr-Jun 2015

Martin R, Grier T, Canham-Chervak M, Anderson MK, Bushman T, DeGroot D, Jones, BH. 2016. Validity of self-reported physical performance and BMI in a military population. *Journal of Strength and Conditioning Research*, 30:1, 26-32

Roy T, Songer T, Feifei Ye, LaPorte R, Grier T, Anderson M, Chervak M. 2014. Physical training risk factors for musculoskeletal injury in female soldiers. *Military Medicine*, 179:12, 1432-1438

Peer-reviewed Journal Manuscripts (Submitted to Journal, Awaiting Decision)

Anderson M, Grier T, Dada E, Canham-Chervak M, Jones BH. Physical Fitness, Gender, and Injury Risk within an Operational Army Brigade. In Review at *American Journal of Preventive Medicine*

Bushman T, Grier T, Alemany J, Anderson, M Canham-Chervak M, North W, Jones BH. Functional Movement Screen: Pain versus Composite Score and Injury Risk. *JOSPT* under review

Grier T, Canham-Chervak M, Bushman T, Anderson M, North W, Jones BH. Fitness Assessment Performance and Injury Risk among Active Men and Women. JSCR under review

Martin R, Grier T, Canham-Chervak M, Bushman T, Anderson M, Dada E, Jones BH. Risk Factors for Lower Extremity Sprain and Strain Injuries in an Operational U.S. Army Division. JSCR under review

Peer-reviewed Journal Manuscripts (In Clearance)

Rappole C, Canham-Chervak M, Anderson M, Grier T, Jones BH. Factors Associated with Lower Extremity Training-Related Injuries among Enlisted Women in U.S. Army Operational Units.

Scientific Abstracts

2016

Risk Factors Associated with Running Related Injuries in Physically Active Young Men. Tyson Grier, Michelle Canham-Chervak, Morgan Anderson, Timothy Bushman, Bruce H. Jones. International Journal of Exercise Science: Conference Proceedings: vol.9: iss.4, Article 43 2016

2014

Evaluation of an Injury Prevention Program in a Deploying Army Unit. Canham-Chervak M,Grier T, Dada E, Jones BH. Panel presentation: Keeping the Army Strong through Program Evaluation, for 2014 American Public Health Association Annual Meeting; New Orleans, LA.

2013

Association of Health Behaviors and Risk Factors for Injury: A Study of Military Personnel. Anderson MK, Grier T, Canham-Chervak M, Bushman TT, & Jones BH. Submitted for the 2013 American Public Health Association Annual Meeting; Boston, MA.
https://apha.confex.com/apha/141am/webprogram/Paper284118.html

Association of Physical Fitness Assessments and Injury Risk among U.S. Army Soldiers. Bushman TT, Grier T, Canham-Chervak M, Anderson MK, North WJ, & Jones BH. Submitted for the 2013 American College of Sports Medicine Annual Meeting; Indianapolis, IN. *Med Sci Sports Exerc* S332 Vol. 45 No.5 Supplement (#1728).

http://acsmannualmeeting.org/wp-content/uploads/2013/04/Thursday-Abstracts.pdf

Cigarette use and injury risk among US army soldiers. Canham-Chervak M, Grier T, Jones BH. Submitted for the 2013 American Public Health Association Annual Meeting; Boston, MA.
https://apha.confex.com/apha/141am/webprogram/Paper291462.html

Injury Risk and Performance among Soldiers Wearing Minimalist Running Shoes Compared to Traditional Running Shoes. Grier T, Canham-Chervak M, Bushman TT, Anderson M, North W, & Jones BH. Submitted for the 2013 American College of Sports Medicine Annual Meeting; Indianapolis, IN. *Med Sci Sports Exerc* S52 Vol. 45 No. 5 Supplement (#291).
http://acsmannualmeeting.org/wp-content/uploads/2013/04/Wednesday-Abstracts-with-Cover.pdf

Occupational, Physical Fitness, and Behavior Risk Factors for Injury among US Army Soldiers. Anderson MK, Grier T, Canham-Chervak M, Bushman TT, & Jones BH. Submitted for the 2013 American Public Health Association Annual Meeting; Boston, MA.
https://apha.confex.com/apha/141am/webprogram/Paper283969.html

The Value of Surveys to Identify Modifiable Causes and Risk Factors for Injuries in Hard to Follow Populations: Example from Deployed Male U.S. Army Soldiers. Steelman R, Canham-Chervak M, Grier T, Butler J, Anderson M, Bushman T, & Jones BH. Submitted for the 2013 American Public Health Association Annual Meeting; Boston, MA.
https://apha.confex.com/apha/141am/webprogram/Paper283587.html

2012

Implementation of Physical Readiness Training in an Operational Unit: Effects on Unit Physical Training and Injury. Canham-Chervak M, Grier T, Anderson M, Bushman T, Waajid M, Dada, E, & Jones BH. Prepared for the 2012 Armed Forces Public Health Conference (cancelled).

Injury Risk Associated with Functional Movement Screening in the United States Army. Bushman TT, Grier T, Canham-Chervak M, Anderson MK, & Jones BH. Submitted for the 2012 American College of Sports Medicine Annual Meeting; San Francisco, CA. *Med Sci Sports Exerc* S629 Vol. 44 No. 5 Supplement (#3189).
http://www.abstractsonline.com/Plan/ViewAbstract.aspx?sKey=4c475349-bad4-4868-ad8f-b2ebfbba9d4a&cKey=03dbb452-605a-47b3-94f7-fbec4599b09e&mKey=%7BFCDB1C1C-280A-4DF1-95F8-2DAA9AB6A8BE%7D

Risk Factors Associated with Lower Leg Injuries in the United States Army. Anderson MK, Grier T, Canham-Chervak M, Bushman TT, & Jones BH. Submitted for the 2012 American College of Sports Medicine Annual Meeting; San Francisco, CA. *Med Sci Sports Exerc* S628 Vol. 44 No. 5 Supplement (#3184).
http://www.abstractsonline.com/Plan/ViewAbstract.aspx?sKey=4c475349-bad4-4868-ad8f-b2ebfbba9d4a&cKey=f3b4fae2-490e-4e14-916f-c2e292d13df3&mKey=fcdb1c1c-280a-4df1-95f8-2daa9ab6a8be

Risk Factors for Injury among US Army Soldiers Preparing for Deployment. Anderson MK, Grier T, Canham-Chervak M, Bushman TT, & Jones BH. Submitted for the 2012 American Public Health Association Annual Meeting; San Francisco, CA.

Injury Prevention Activities in the Soldier Medical Readiness Campaign (PHR No. S.0011225)

Scientific Presentations

2015

Grier T, Canham-Chervak M, Anderson M, Bushman T, Jones BH. Risk Factors Associated with Running Related Injuries in Physically Active Young Men. FASCM. ACSM Mid-Atlantic Conference, Harrisburg, PA November 2015

Canham-Chervak M, Grier T, Dada EO, Jones BH. Personal Physical Training and Injury Risk during Military Deployment. National Occupational Injury Research Symposium West, Virginia

2014

Grier T, Canham-Chervak M, Anderson M, Bushman T, Jones BH. Risk Factors Associated with Running Injuries in the United States Army. Army Institute of Public Health Symposium, APG MD, 11 December 2014

Canham-Chervak M, Grier T, Dada E, Jones BH. Evaluation of an Injury Prevention Program in a Deploying Army Unit. American Public Health Association Annual Meeting; New Orleans, LA

Bushman TT, Grier T, Canham-Chervak M, Anderson MK, & Jones BH. Association of Functional Movement Screening with Injury Risk in Army Soldiers. 2014 International Congress on Soldiers' Physical Performance; Boston, MA

Grier T, Canham-Chervak M, Bushman T, Anderson M, Jones BH. Evaluations of Physical Training Programs in an Infantry Division. 2014 International Congress on Soldiers' Physical Performance; Boston, MA.

2013

Anderson MK, Grier T, Canham-Chervak M, Jones BH. Association of Health Behaviors and Risk Factors for Injury: A Study of Military Personnel. U.S. Army Institute of Public Health, Aberdeen Proving Ground, MD (SMR-CP Education Series Presentation, October 2013)

Bushman TT, Grier T, Canham-Chervak M, Anderson MK, North WJ, & Jones BH. Association of Physical Fitness Assessments and Injury Risk among U.S. Army Soldiers. *American College of Sports Medicine*. American College of Sports Medicine (ACSM) Annual Meeting; Indianapolis, IN 2013.

Canham-Chervak M, Grier T, Jones BH. Cigarette use and injury risk among US army soldiers. American Public Health Association Annual Meeting; Boston, MA 2013.

Grier T, Canham-Chervak M, Bushman TT, Anderson M, North W, & Jones BH. Injury Risk and Performance among Soldiers Wearing Minimalist Running Shoes Compared to Traditional Running Shoes. American College of Sports Medicine (ACSM) Annual Meeting; Indianapolis, IN 2013.

Anderson MK, Grier T, Canham-Chervak M, Bushman TT, Waajid M, & Jones BH. Occupational, Physical Fitness, and Behavior Risk Factors for Injury among US Army Soldiers. American Public Health Association Annual Meeting; Boston, MA 2013.

Steelman R, Canham-Chervak M, Grier T, Butler J, Anderson M, Bushman T, & Jones BH. The Value of Surveys to Identify Modifiable Causes and Risk Factors for Injuries in Hard to Follow Populations:

Example from Deployed Male U.S. Army Soldiers. American Public Health Association Annual Meeting; Boston, MA 2013.

2012

Bushman TT, Grier T, Canham-Chervak M, Anderson MK, Waajid M, & Jones BH. Injury Risk Associated with Functional Movement Screening in the United States Army. American College of Sports Medicine (ACSM) Annual Meeting; San Francisco, CA 2012.

Anderson MK, Grier T, Canham-Chervak M, Bushman TT, Waajid M, & Jones BH. Risk Factors Associated with Lower Leg Injuries in the United States Army. American College of Sports Medicine (ACSM) Annual Meeting; San Francisco, CA 2012.

Information papers

Load Carriage and Injury Risks. Grier T (2016).

Association of Injury Risk with Minimalist and Traditional Running Shoes. Grier T (2013).

Body Mass Index and Percent Body Fat. Canham-Chervak M (2012).

News articles

Soldiers who smoke have increased injury risk, reduced muscle endurance. U.S. Army Public Health Command. Army.mil article (2011).
http://www.army.mil/article/70909/Soldiers_who_smoke_have_increased_injury_risk__reduced_muscle_endurance/

Use caution with new running shoe technology, Army.mil (Jan 2012)
http://www.army.mil/article/71428

Army Study: No difference in injury rates between traditionally and minimally shod soldiers (2013)
http://runblogger.com/2013/05/army-study-no-difference-in-injury.html

Communication products

Soldier Medical Readiness Campaign IP/HPO and HP Web site:
http://phc.amedd.army.mil/topics/healthyliving/Pages/SoldierMedicalReadinessCampaignPlanLOE3.aspx
(Apr 2012)

Public Health Notice No. 0312-01, What Army leaders should know about extreme conditioning programs (Mar 2012)

Extreme Conditioning Programs Army Stand-To! article (Jul 2012)

Minimalist running shoe poster (Jul 2012)

Minimalist running shoe brochure (Jul 2012)

Injury Prevention Activities in the Soldier Medical Readiness Campaign (PHR No. S.0011225)

Train Smart, Get Results, and Prevent Injuries poster, also adapted for use in the Performance Triad poster series (Mar 2013)

Get Results, Not Injured poster, also adapted for use in the Performance Triad poster series (Mar 2013)

Don't Get Sidelined…Train Smart! poster, also adapted for use in the Performance Triad poster series (Mar 2013)

Technical Reports (Published in DTIC)

U.S. Army Public Health Command. Technical Report No. WS.0030637.3, Evaluation of the Iron Horse Performance Optimization Physical Training Program (IHPOP) in a Light Infantry Brigade, October 2010–April 2011, by Grier T, Canham-Chervak M, Anderson M, Bushman T, Jones BH. USAPHC, Aberdeen Proving Ground, MD, 2010

Technical Reports (In Clearance)

Army Public Health Center (Provisional). Report No. WS.0007177.3, Evaluation of the Mountain Athlete Warrior (MAW) Physical Training Program in a Light Infantry Brigade, March 2011-February 2013, by Anderson MK, Grier T, Canham-Chervak M, Jones BH. Army Public Health enter (Provisional), Aberdeen Proving Ground, MD, 2016

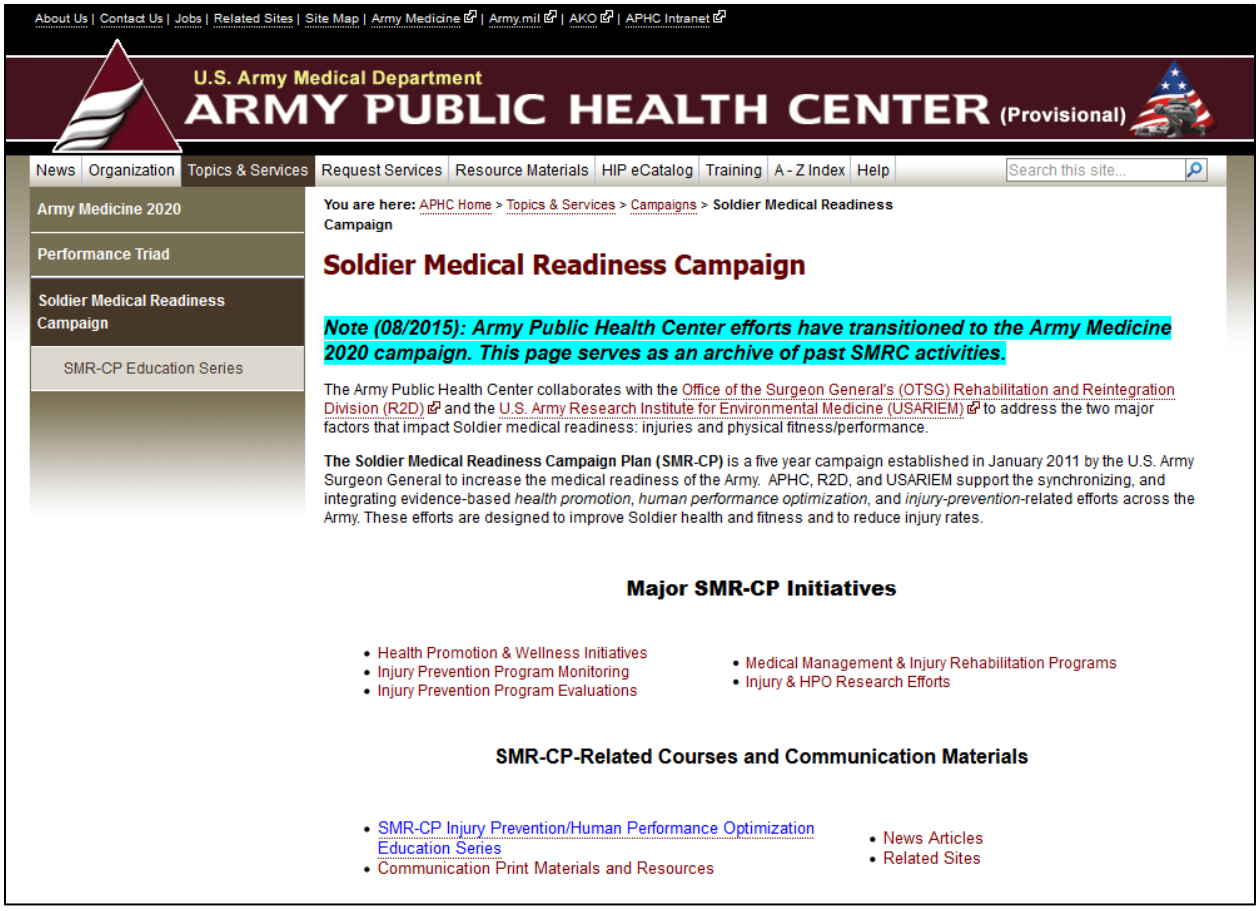
Technical Reports (In Progress)

Army Public Health Center (Provisional). Public Health Report No. 23-01-0312, Evaluation of the Tactical Athlete Program in a Light Infantry Brigade, by Grier T, Canham-Chervak M, Bushman T, Anderson M, and Jones BH. Army Public Health Center (Provisional), Aberdeen Proving Ground MD, 2016

Army Public Health Center (Provisional). Public Health Report No. S.0007177-16, Deployment Injuries and Injury Risk Factors in a Light Infantry Brigade, by Canham-Chervak M, Grier T, Rappole C, Butler J, Anderson M, Bushman T, Steelman R, Jones BH. Army Public Health Center (Provisional), Aberdeen Proving Ground MD, 2016

Appendix J

APHC Soldier Medical Readiness Campaign Web page (screen shots as of March 2016)



Health Promotion & Wellness Initiatives

PHYSICAL ACTIVITY • HEALTHY WEIGHT • TOBACCO FREE LIVING

The health promotion and wellness initiatives within the SMR-CP are focused on coordinating and supporting services that promote physical activity, healthy weight, and tobacco-free living. These three areas are in alignment with the National Prevention and Health Promotion Strategy as factors that impact injury risk and human performance. They also support the Army Surgeon General's Performance Triad. Soldiers who engage in regular physical activity, maintain a healthy weight and live tobacco free lives build personal health, reduce their risk of injury, and improve their unit's physical readiness.

Installation-based health promotion and wellness programs for Soldiers and Family members include:

Army Wellness Centers	Serve as community resources providing Soldiers and family members with fitness and healthy lifestyle programs to improve their health and wellbeing.
Health Promotion Offices	Centrally managed Health Promotion Officers at FORSCOM installations work with senior commanders to integrate medical, mission, and garrison assets through the Community Health Promotion Councils (CHPCs). CHPCs provide oversight, monitoring, coordination and evaluating all health promotion, risk reduction, and suicide prevention initiatives on the installation.

Additional resources and programs on nutrition, tobacco-free living, and physical fitness and training are available.

Back to top

Injury Prevention Activities in the Soldier Medical Readiness Campaign (PHR No. S.0011225)

Injury Prevention Program Monitoring

Injury Prevention Program Monitoring develops the capability for surveillance among the Medically Not Ready (MNR) Soldier population, using injuries as model. Data collected through the Armed Forces Health Surveillance Center (AFHSC), the Medical Protection System (MEDPROS), eProfile, disability, and other sources will be used to identify, track and report specific health outcomes that are barriers to Soldier Medical Readiness (SMR). The knowledge acquired will enable the establishment of clinical and prevention efforts focused on leading barriers to SMR.

Activities that support this strategic objective:

- **Company-level injury monitoring in Initial Entry Training:** Represents the first unit-level injury surveillance program and supports evaluation of IET injury prevention programs such as the Soldier Athlete Initiative. Summaries of unit-level BCT and OSUT injury rates (i.e. company rates, battalion rates, and post rates) are produced by gender for each training type (i.e., AIT, BCT, OSUT INF, OSUT CAV, OSUT AR, OSUT, MP, and OSUT ENG).
- **Administrative medical readiness data linked to medical records on injury and other conditions:** Medically Not Ready data and electronic medical records are linked to identify leading specific health outcomes that are barriers to SMR, information that informs clinical and prevention planning.
- **Surveillance reports for key medical outcomes (deaths, disabilities, and medical encounters):** Existing medical and administrative data provide information that can be used to guide decisions regarding next steps for addressing leading causes of injury and barriers to medical readiness.

Back to top

Injury Prevention Activities in the Soldier Medical Readiness Campaign (PHR No. S.0011225)

Injury Prevention Program Evaluations

Among the Army active duty population, injury is a leading cause of medical encounters with over 1.3 million medical encounters due to acute injuries and chronic musculoskeletal conditions annually (Defense Medical Surveillance System, 2012). Identification and evaluation of injury prevention (IP) and human performance optimization (HPO) programs are vital to reducing injury rates and improving physical fitness.

The Army is currently evaluating promising injury prevention and human performance optimization initiatives in training and operational environments.

- **Initial Entry Training Soldier Athlete Initiative:** provides company-level injury surveillance to assist Army leadership with identification of units with effective injury prevention program (i.e. those with consistently lower injury rates).
- **Evaluation of Physical Fitness Training in Operational Units:** the Army Public Health Center Injury Prevention Program is leading efforts to evaluate the effects of unit-based physical training programs on injury rates and physical fitness within operational units.

More information on injury prevention and physical fitness and training.

Back to top

Medical Management & Injury Rehabilitation Programs

MUSCULOSKELETAL SCREENING AND REFERRAL TOOLS

Identifying injuries quickly is important so that appropriate care and management can be initiated as soon as possible, preventing further complications. The ultimate goal of early identification and treatment of injuries is to maximize the Soldier's function. Unit-based and MTF-based programs provide early identification and management of injuries, return Soldiers to duty quickly, and optimize a medically ready force.

- **Standardized e-Profile, sick slips, and reconditioning programs:** used to facilitate unit physical training and improve communication between providers and unit leaders.
- **Screening and Referral Tools:** developed based on best practices and evidence to assist primary care providers in appropriately managing patients with acute injuries and conditions. Learn more about Musculoskeletal Screening and Referral Tools.

The Army is evaluating the effects of Musculoskeletal Action Teams, which are advanced physical training and reconditioning teams at the battalion and brigade levels that aim to reduce or lessen the severity of injuries through early identification and treatment of injuries.

Back to top

Injury and HPO Research Efforts

Communication of findings and recommendations provides the link between research and practice necessary to implement effective injury prevention and human optimization programs. Experts from the APHC, the OTSG, and USARIEM have formed the SMR-CP Health Promotion and Musculoskeletal Injury Working Group to disseminate scientific information aimed at reducing musculoskeletal injuries to both military and civilian communities.

SMR-CP-Related Courses and Communication Materials

Soldier Medical Readiness Campaign Injury Prevention/Human Performance Optimization Education Series

The SMR-CP IP/HPO Education Series is designed to provide military medical providers and staff, including physical therapists, nurses, and health promotion professionals, with information about a variety of medical readiness topics. The Series consists of quarterly Defense Connect Online (DCO) sessions with two or more presentations from experts in the fields of injury prevention, human performance optimization, and health promotion.

Communication Print Materials & Resources

- Performance Triad Soldier Campaign: Soldier's guide, tip card and posters containing activity and injury prevention information are available on the Army Medicine website.
- U.S. Army Stand To! Performance Triad Pilot Program
- Medical Readiness Rundown: SMR-CP Newsletter *(*AKO account needed to download)*
- U.S. Army Stand To! Tobacco Cessation and Tobacco-Free Living
- AMEDD Tobacco-Free Living Toolkit
- Tobacco Use Reports, Literature, and Publications
- Tobacco Cessation Education
- Tobacco-Free Living Resource Materials
- U.S. Army Stand To! Extreme Conditioning Programs
- PHN No. 0312-01: What Army Leaders Should Know about Extreme Conditioning Programs
- Public Health Approach to Injury Prevention: The U.S. Military Experience, A supplement to the American Journal of Preventive Medicine, Vol 38, No. 1 (p. S1-S222), January 2010
- Minimalist Running Shoes (brochure & poster)

Visit the APHC Health Information Products e-Catalog to download or order available materials.

Injury Prevention Activities in the Soldier Medical Readiness Campaign (PHR No. S.0011225)

News Articles

- The Great American Smokeout- Be smoke free for a day (17 November 2014)
- Pre-diabetes: Who is at risk? (3 November 2014)
- Prevent ergonomic injuries in the workplace (1 October 2014)
- Army helps moms maintain fitness before, after, childbirth (1 October 2014)
- Tobacco Kills. Period. (10 September 2014)
- Dietary supplements: Safety still an issue, better options available (2 September 2014)
- Army doctor: Soldiers should avoid overtraining to prevent injury (25 August 2014)
- Scientists discuss strategies for making Soldiers stronger at international conference (23 August 2014)
- International scientists discuss Soldier physical performance (21 August 2014)
- Fostering Progress through International Collaboration (21 August 2014)
- RACH dietitians offer tasty changes for diners (15 August 2014)
- Partnerships enhance public health (8 August 2014)
- Download This! The Performance Triad App (version 1.0) (24 July 2014)
- Performance Triad app now available (10 July 2014)
- Army Leader tests the Performance Triad (3 July 2014)
- Protect your eyes in sports- just like you do in combat (1 July 2014)
- Public Health Command promotes sleep, activity, nutrition during Performance Triad kick-off week (12 June 2014)
- Post-retirement weight gain - fact or fiction? (30 May 2014)
- Army program encourages healthy lifestyles (29 May 2014)
- Be part of the System for Health (29 May 2014)
- Farmer's markets offer healthy choices to Soldiers and families (22 May 2014)
- Health screening; adequate sleep, activity, nutrition vital to Soldier readiness (1 May 2014)
- Is it possible to eat right on a budget? (28 February 2014)
- Adequate sleep brings benefits for a lifetime (28 February 2014)
- Injury experts evaluate safety of new Army parachutes (21 February 2014)
- Reservists visit Aberdeen Army Wellness Center (19 February 2014)
- Empower yourself to better health (2 January 2014)
- Strategies to avoid office weight gain (2 January 2014)
- Thirdhand smoke: a new tobacco hazard for families. (1 November 2013)
- Beware of emotional eating. (1 November 2013)
- Lower your cholesterol to improve your health. (3 September 2013)
- Children can eat healthy while on-the-go. (1 July 2013)
- Less salt please. (28 March 2013)
- Can't sleep? Ways to help you feel rested when traveling. (28 February 2013)
- Eat right, your way, every day. (28 February 2013)
- Secondhand smoke- A danger in the air (8 November 2012)
- Sports injuries in the Army: Don't get sidelined (6 August 2012)
- Helping Soldiers maintain a healthy weight through nutrition (2 April 2012)
- Use caution with new running shoe technology (3 January 2012)
- Soldiers who smoke have increased injury risk, reduced muscle endurance (15 December 2011)

Related Sites

- Human Performance Resource Center (HPRC): HPRC's human performance optimization website is for U.S. Warfighters, their families, and those in the field of HPO who support them. The goal is Total Force Fitness- Warfighters optimized to carry out their mission as safely and effectively as possible.
- Soldier Medical Readiness Campaign Plan Video
- Performance Triad: Learn more about sleep, activity, and nutrition for the Army Family.

Back to top

For More Information

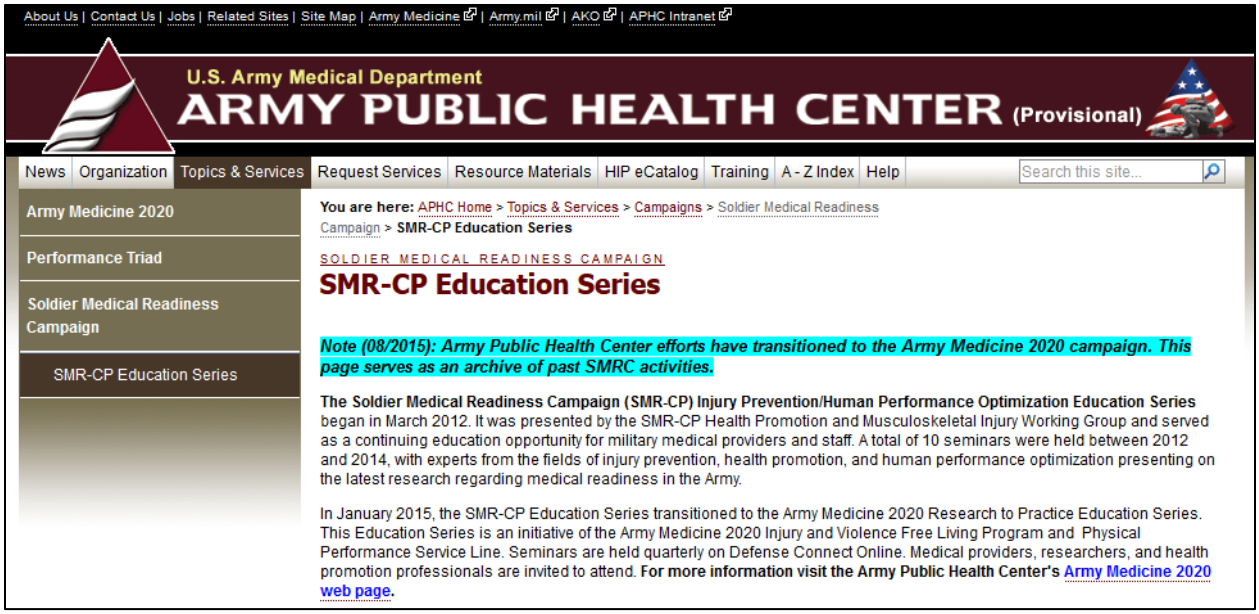
- **SMR-CP Education Series**

Related programs and contacts

- **Injury Prevention Program**

Appendix K

SMR-CP Education Series Web Page and Presentations



Injury Prevention Activities in the Soldier Medical Readiness Campaign (PHR No. S.0011225)

Presentation	Date
Risky Business: Population Screening and the Limitations of Risk Assessment	December 2014
Perceived Barriers to Sleep, Activity, Nutrition among U.S. Army Soldiers- Performance Triad Baseline Qualitative Results	December 2014
Encouraging Healthy Food Choices with an Environmental Intervention in Military Dining Facilities	September 2014
An Investigation of the Effects of Performance-Enhancing Supplements and Other Health Related Factors on Adverse Medical Outcomes in Active Duty U.S. Army Soldiers	September 2014
H.E.A.L.T.H.: Technology Tools for Warfighter Readiness & Resilience	July 2014
Physical Training to Optimize Load Carriage Performance: Systematic Review and Meta-Analysis	July 2014
IET Injury and Fitness Surveillance, 2010-2012: Trends and Lessons Learned	April 2014
Efficacy and Safety of Protein Supplements for U.S. Armed Forces Personnel: Consensus Statement	April 2014
Army Wellness Center Program Operations: A Strategic Overview	October 2013
Assessment of Dietary Intake using the Healthy Eating Index during Military Training	October 2013
Extreme Conditioning Program Injury Risk in a U.S. Army Brigade Combat Team	October 2013
Association of Health Behaviors and Risk Factors for Injury: A Study of Military Personnel	October 2013
The Performance Triad (Sleep, Activity, Nutrition)	June 2013
MP3, Functional Movement Assessments: Practical Application	January 2013
Performance Nutrition	January 2013
Creating Active Communities and Healthy Environment (CACHE) Toolkit	January 2013
Dietary Supplement Use in the U.S. DoD & Coast Guard Uniformed Personnel: Potential Risk and Benefit for Operational Health and Performance	November 2012
Operational Supplement Safety (OPSS): A DoD-Wide Educational Initiative	November 2012
Overview of a Tobacco Free Living Initiative	November 2012
Army Restorative Physical Readiness Training	November 2012
Recent Insights of Epidemiological and Biomechanics Research into Military Low Back Pain	July 2012
Healthy Weight Campaign Informational Brief	July 2012
Minimalist Running Shoes	July 2012
Soldier Fueling Program Evaluation: Phase I (Qualitative and Descriptive Analysis) Preliminary Results	March 2012
Physical Activity and Risks of Injuries in Civilian and Military Populations	March 2012
Army Physical Readiness Training	March 2012
Vanguard Fitness Trainer	March 2012

Appendix L

Review of SMR-CP Metrics & Links to Other Campaigns, September 2014

SMRC objective/Strategic Management System metric	Status	Tracked in another campaign
4.1, % completion of company-level injury surveillance efforts	Ongoing	Yes (Soldier 2020)
4.2, % of Medically Not Ready cases linkable to medical records data on injury & other conditions	Ongoing	No
4.3, % of surveillance reports completed for key medical outcomes (deaths, disabilities, and medical encounters)	Completed/closed on 5 March 2014	
8.1, Number of publications on musculoskeletal injury and nutrition	Ongoing	No
8.2, Number of presentations on musculoskeletal injury and nutrition	Ongoing	No
8.3, Number of injury prevention/human performance optimization products produced	Ongoing	No
9.1, Data obtained in units evaluated (BCT/AIT, 3/25ID, 2/4ID, 3/4ID, 4/4ID)	Completed/closed on 26 June 2014	
9.2, % MRC class 1 and 2 in selected FORSCOM unit	Completed/closed on 26 June 2014	
9.3, % Analysis completed assessing program effects in units evaluated	Ongoing	Yes (AM2020 Injury and Violence-Free Living)
10.1, % 4ID soldiers at 'low risk' of injury based on unit fitness assessments	Completed/closed on 5 March 2014	
11.1, % Army Wellness Centers worldwide meeting established standards	Ongoing	Yes (AM2020 Develop Infrastructure for Health)
11.2, % installations with health promotion officer-facilitated CHPC	Ongoing	Yes (AM2020 Develop Infrastructure for Health; R2C)
11.3, % Soldiers maintaining healthy body weight	Ongoing	No
11.4, % Soldiers reporting tobacco use	Ongoing	Yes (AM2020 Tobacco Free Living; R2C; Department of Defense, Secretary of Defense Advisory Committee on Tobacco Reduction)

Note: R2C=Army Ready and Resilient Campaign; AM2020=Army Medicine 2020 Campaign